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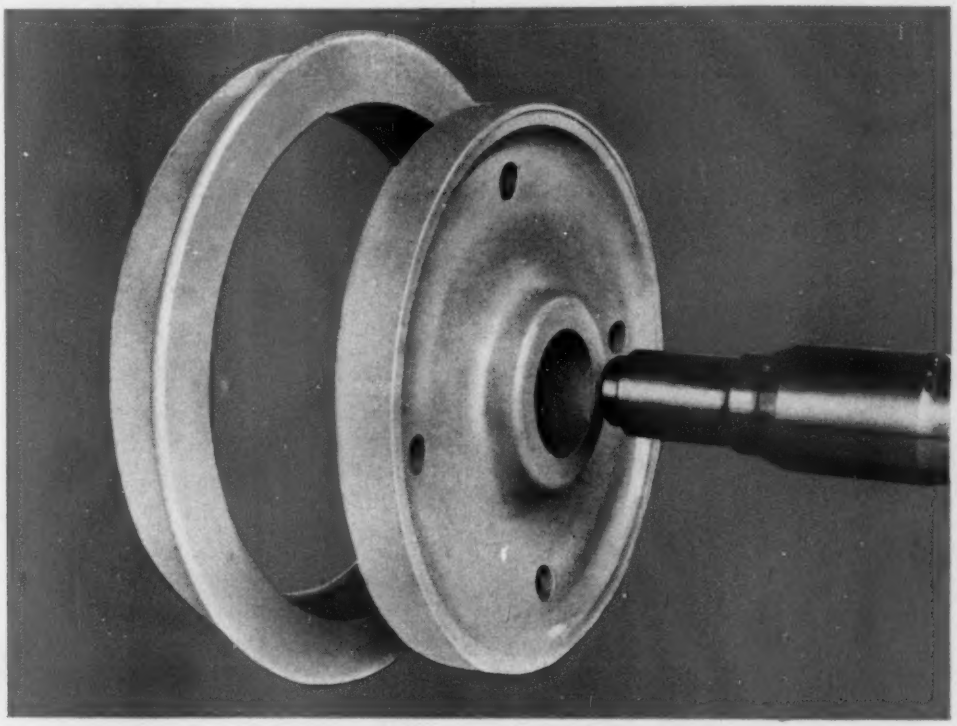

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The ever-growing number of diesel railcars on our railways call for wheels, tyres, and axles like these made by Steel, Peech & Tozer and machined and assembled into complete sets by Owen & Dyson Limited.

Steel, Peech & Tozer has nearly seventy years' experience in making quality steel. Today, the company supplies the railways of the world with special steels to meet all modern conditions.

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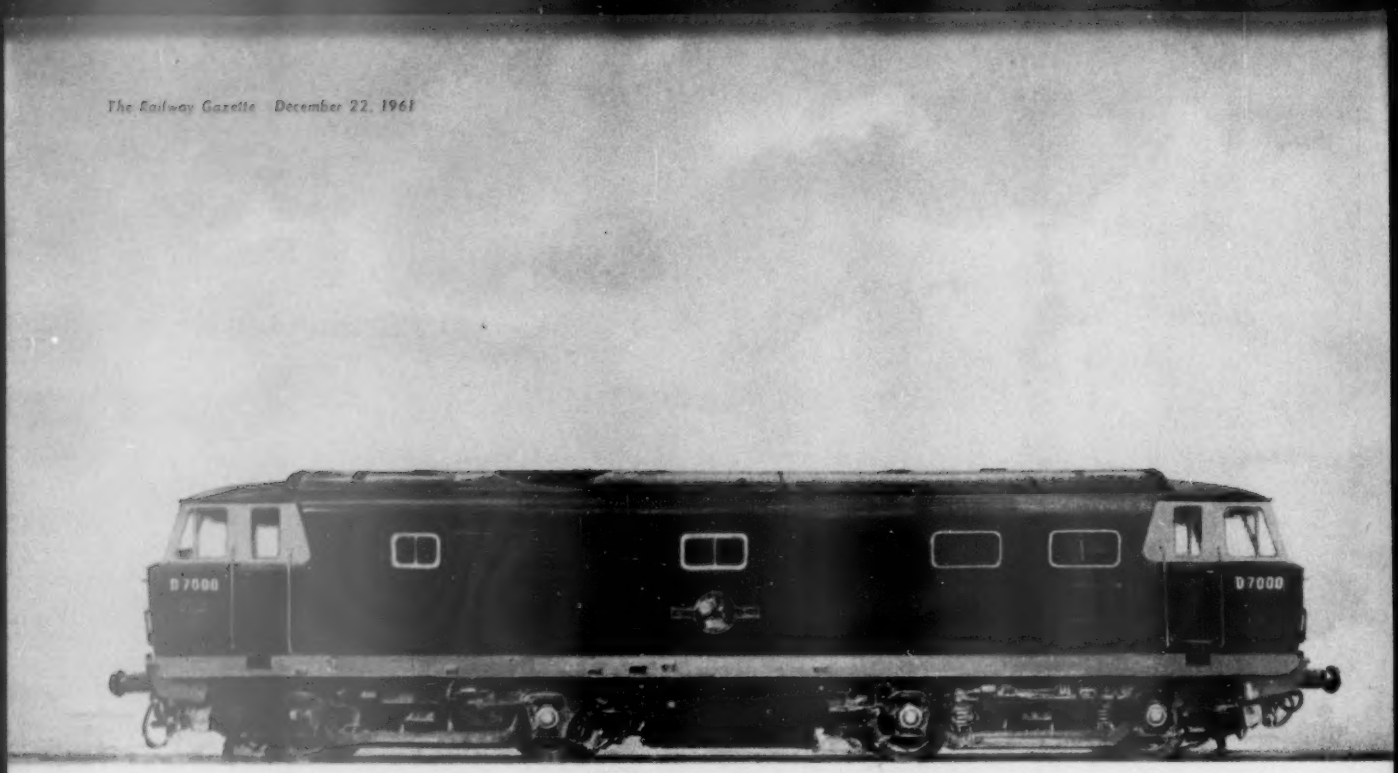

ON 95 'HYMEK' LOCOMOTIVES

FOR BRITISH RAILWAYS (WESTERN REGION)

Of the 95 Hymek Diesel-hydraulic locomotives being supplied by Beyer Peacock (Hymek) Ltd., for the Western Region of British Railways, some are already in service.

All the axles on all these locomotives will run in Timken bearings.

British Timken, Duston, Northampton, Division of The Timken Roller Bearing Company. Timken bearings manufactured in England, Australia, Brazil, Canada, France and U.S.A.

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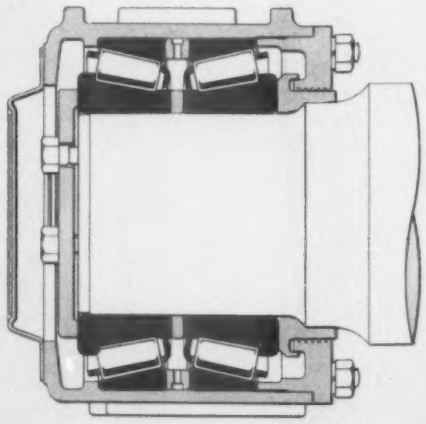

Famous Trains

GREAT BRITAIN

air conditioned by STONE-CARRIER

Photograph by courtesy of Metropolitan-Cammell Carriage & Wagon Co. Ltd.

BRITISH RAILWAYS' NEW DIESEL PULLMAN TRAINS

These six- and eight-car trains, operating on the Midland and Western Regions respectively, represent the greatest advance in travelling standards and operating efficiency yet achieved on the railways of Britain. Superbly equipped, they are the first passenger trains fitted with air-conditioning in this country. J. Stone had the privilege of supplying the air-conditioning equipment, together with the auxiliary power equipment, lighting, speedometers and other accessories.

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J. STONE & COMPANY (DEPTFORD) LTD

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WESTINGHOUSE IN EAST AFRICA

THE ENGLISH ELECTRIC CO'S
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DEMONSTRATES
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One of 10 'English Electric' '90' Class metre gauge locomotives for East African Railways and Harbours Administration. Fitted with Westinghouse Automatic Brake with independent locomotive brake.

Brakes designed and made in England by:—

WESTINGHOUSE BRAKE AND SIGNAL CO. LTD., 82 YORK WAY, LONDON, N.1

Associated in Australia with
Westinghouse Brake (Australasia) Pty., Ltd., Concord West, N.S.W.

Associated in India with
Saxby & Farmer (India) Private Ltd., Calcutta

Associated in South Africa with
Westinghouse Brake & Signal Co. S.A. (Pty.) Ltd., Johannesburg. *Agents—Bellamy and Lambie, Johannesburg*

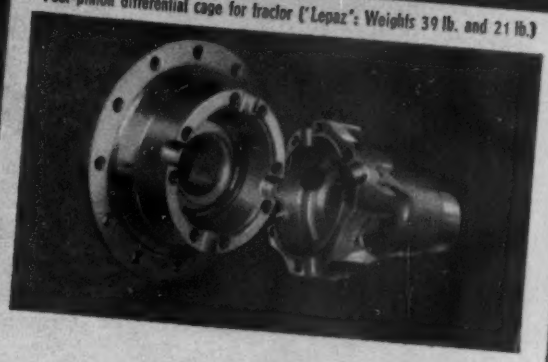
Automobile rear-axle housing (Ley's 'Black Heart': Weight 32 lb.)

'BLACK HEART' Ferritic Malleable Iron

The properties of Ley's 'Black Heart' exceed the requirements of BS.310-1958 Grade B22/14, which specifies the following minimum mechanical properties:—

Tensile Strength: 22 tons/sq. inch
Yield Point: 13 tons/sq. inch
Elongation: 14 per cent.

Four-pinion differential cage for tractor ('Lepaz': Weights 39 lb. and 21 lb.)



'LEPAZ' Pearlitic Malleable Iron

The properties of Ley's 'Lepaz' exceed the requirements of BS.3333-1961 Grade P33/4, which specifies the following minimum mechanical properties:—

Tensile strength: minimum 33 tons/sq. inch
0.5 per cent permanent-set stress: minimum 20 tons/sq. inch
Elongation: .. .. minimum 4 per cent.

'Lepaz' can be selectively hardened by Flame or Induction methods.

LEY'S

range of malleable irons

Produced in the most modern plant, and under strict control, the Ley's range meets every requirement. Ley's malleable castings, with their excellent 'castability' and toughness, permit the engineer all the freedom he could desire in designing strong durable parts.

LEY'S MALLEABLE CASTINGS COMPANY LTD
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Regd. Trade Marks: 'Black Heart,' 'Leys,' 'Lepaz,' 'Lemax.'

Flame-hardened internal gear and differential housing ('Lemax': Weight 38 lb.)

'LEMAX' Heat-Treated Pearlitic Malleable Iron

The 'Lemax' range of heat-treated pearlitics includes the higher strength materials. The mechanical properties meet the specification of the American Society for Testing Materials.

Tensile strength: range 30–45 tons/sq. inch
0.5 per cent permanent-set stress: range 20–36 tons/sq. inch
Elongation: .. .. range 8–2 per cent.

'Lemax' can be selectively hardened by Flame or Induction methods.

One of thirty-five 2,000-h.p. main-line diesel-electric locomotives supplied to the Rhodesian Railways by The English Electric Company Limited.

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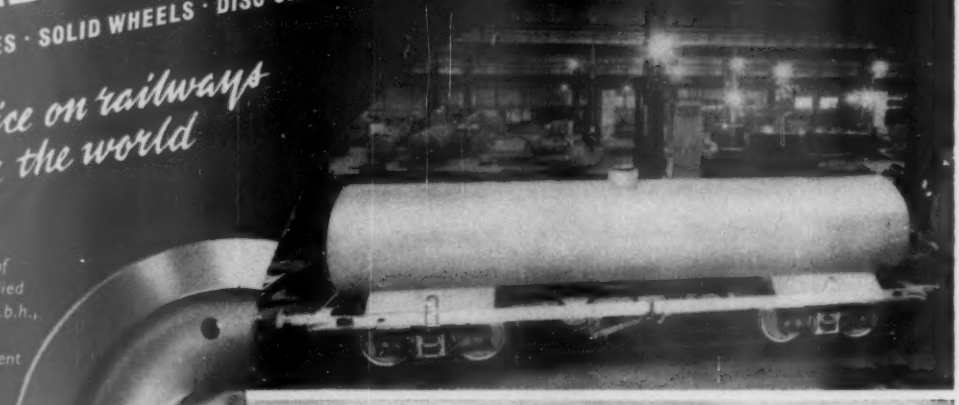
TYRES · AXLES · SOLID WHEELS · DISC CENTRES · ASSEMBLED PAIRS OF WHEELS & AXLES

in service on railways all over the world



One of a number of tank wagons supplied by Rax-Werk G.m.b.h., Austria, to the Pakistan Government Railways.

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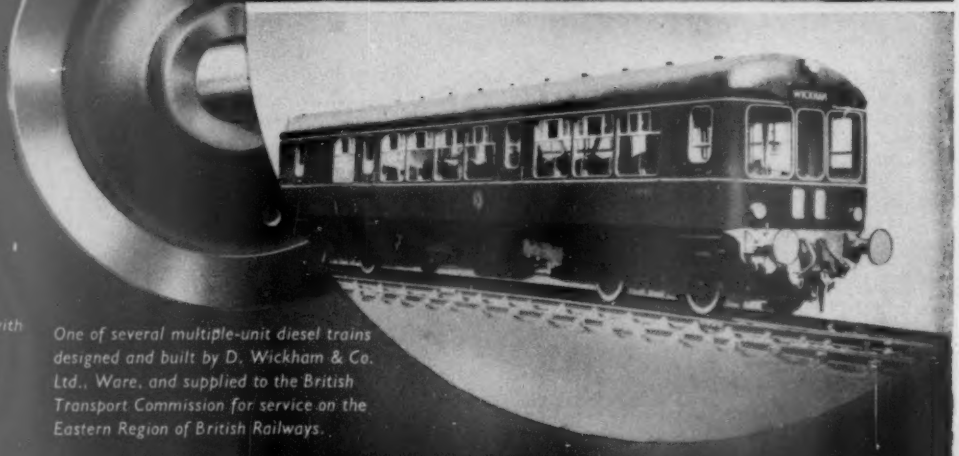

All the vehicles shown are fitted with Baker-Bessemer wheels and axles.

One of several multiple-unit diesel trains designed and built by D. Wickham & Co. Ltd., Ware, and supplied to the British Transport Commission for service on the Eastern Region of British Railways.

JOHN BAKER & BESSEMER LIMITED

REGISTERED OFFICE: KILNHURST STEEL WORKS · G.P.O. BOX No. 3 · ROTHERHAM · YORKSHIRE
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London Office: LOCOMOTIVE HOUSE, BUCKINGHAM GATE, LONDON, S.W.1. Telephone: VICtoria 5278-9

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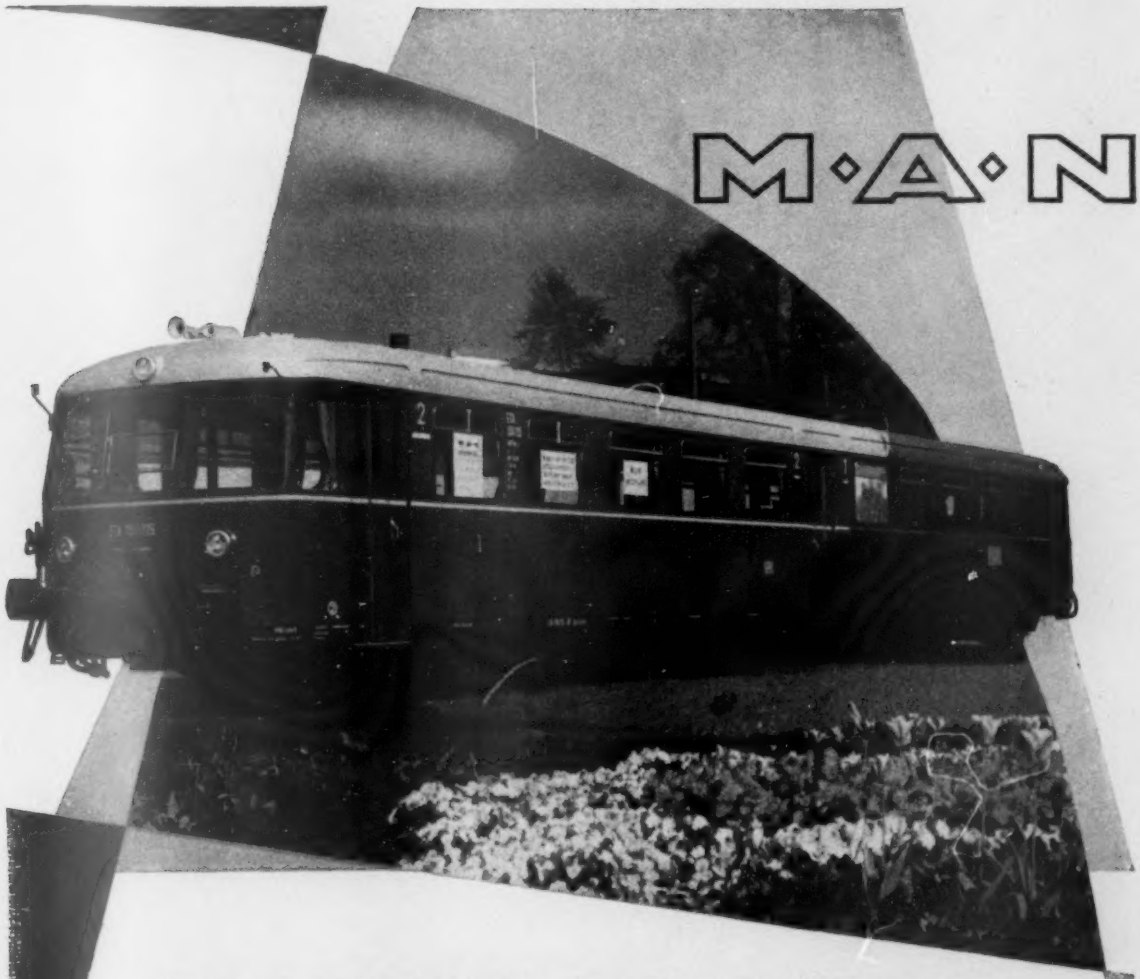

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for high economy on branch lines and local services.

Electric traction ensures absence of noise and vibrations, high starting acceleration.

Battery operation eliminates capital expenditure for overhead lines.

100 km. p. hr. maximum speed; daily range 250 to 350 km. depending on route schedule (500 km. if re-charged).

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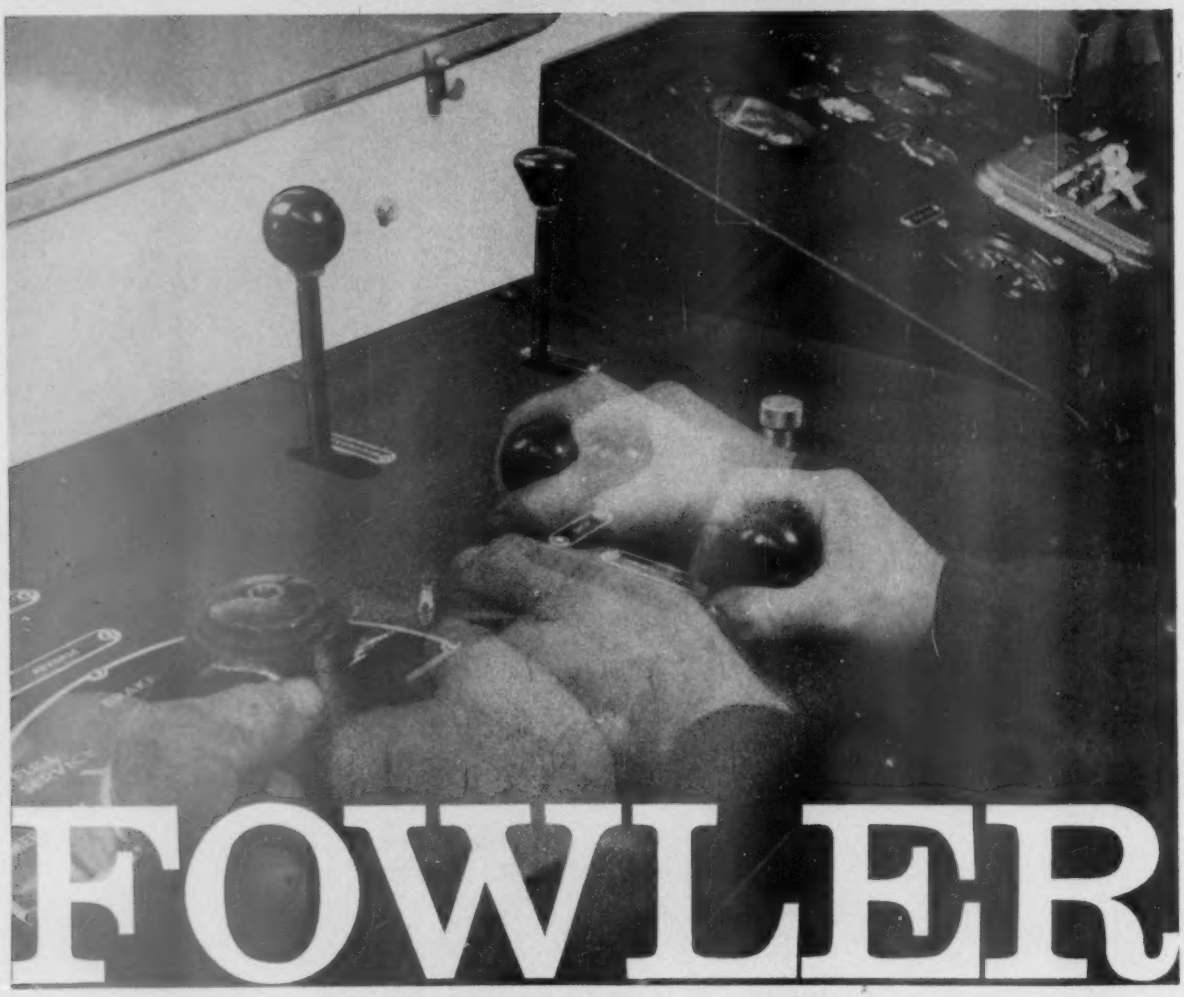

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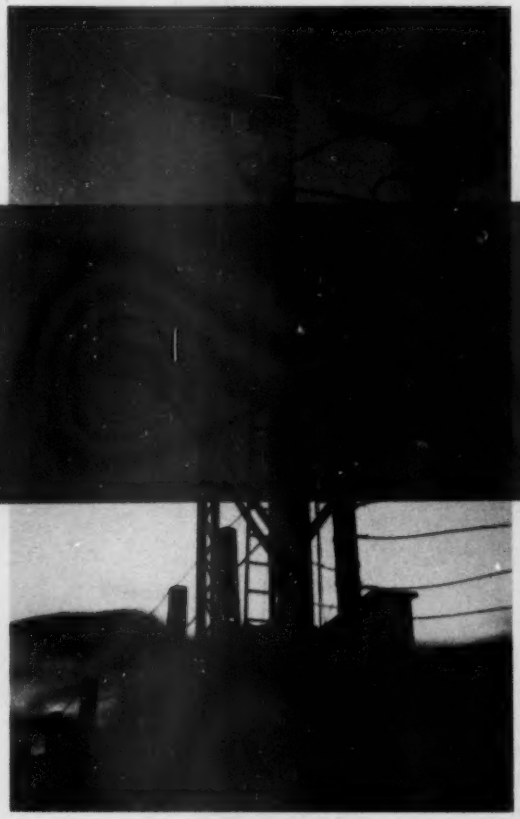

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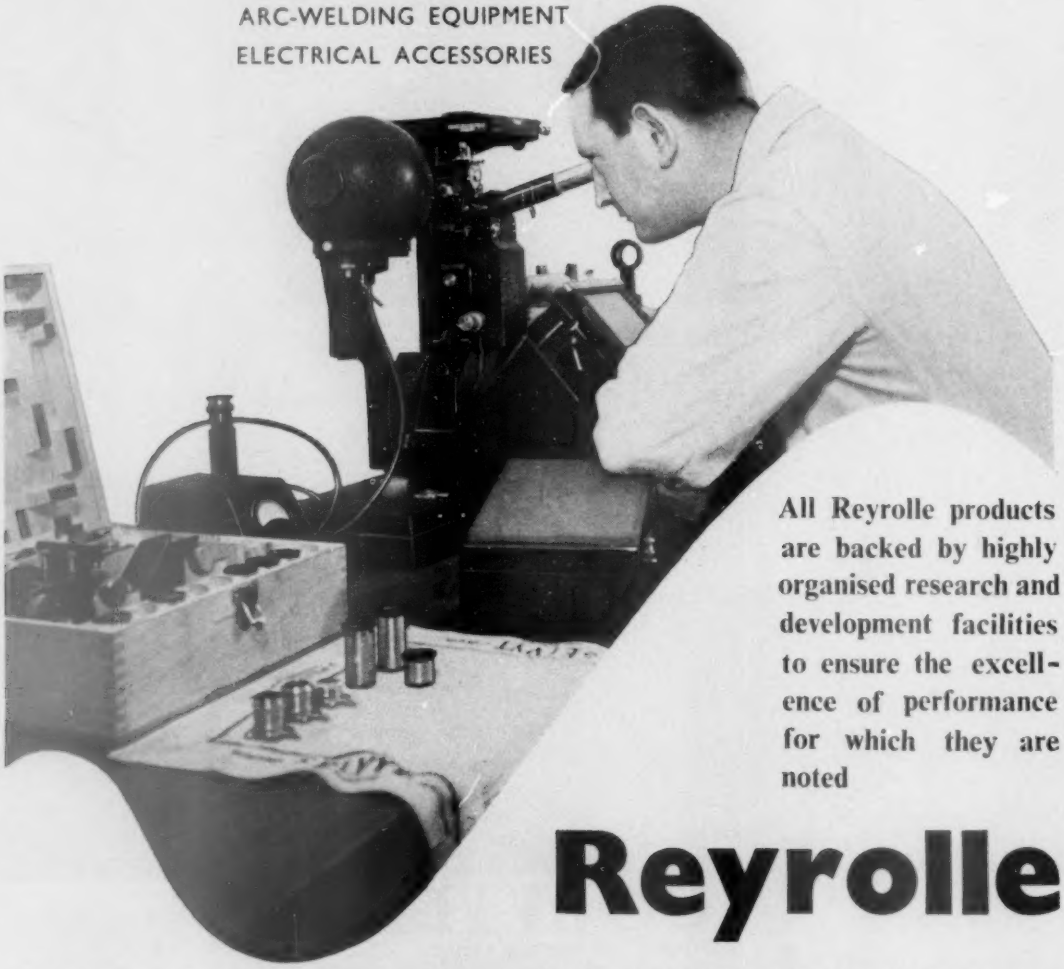

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Manufactured by our licensees in Europe. Successfully passed U.I.C. tests for 75 m.m. travel buffers and is now being applied to S.N.C.F. rolling stock. Also manufactured and exported from the U.S.A.

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A thoroughly reliable friction gear guaranteeing many years of trouble-free service either when hook coupling is used with yoke application or with pull rod through the gear.

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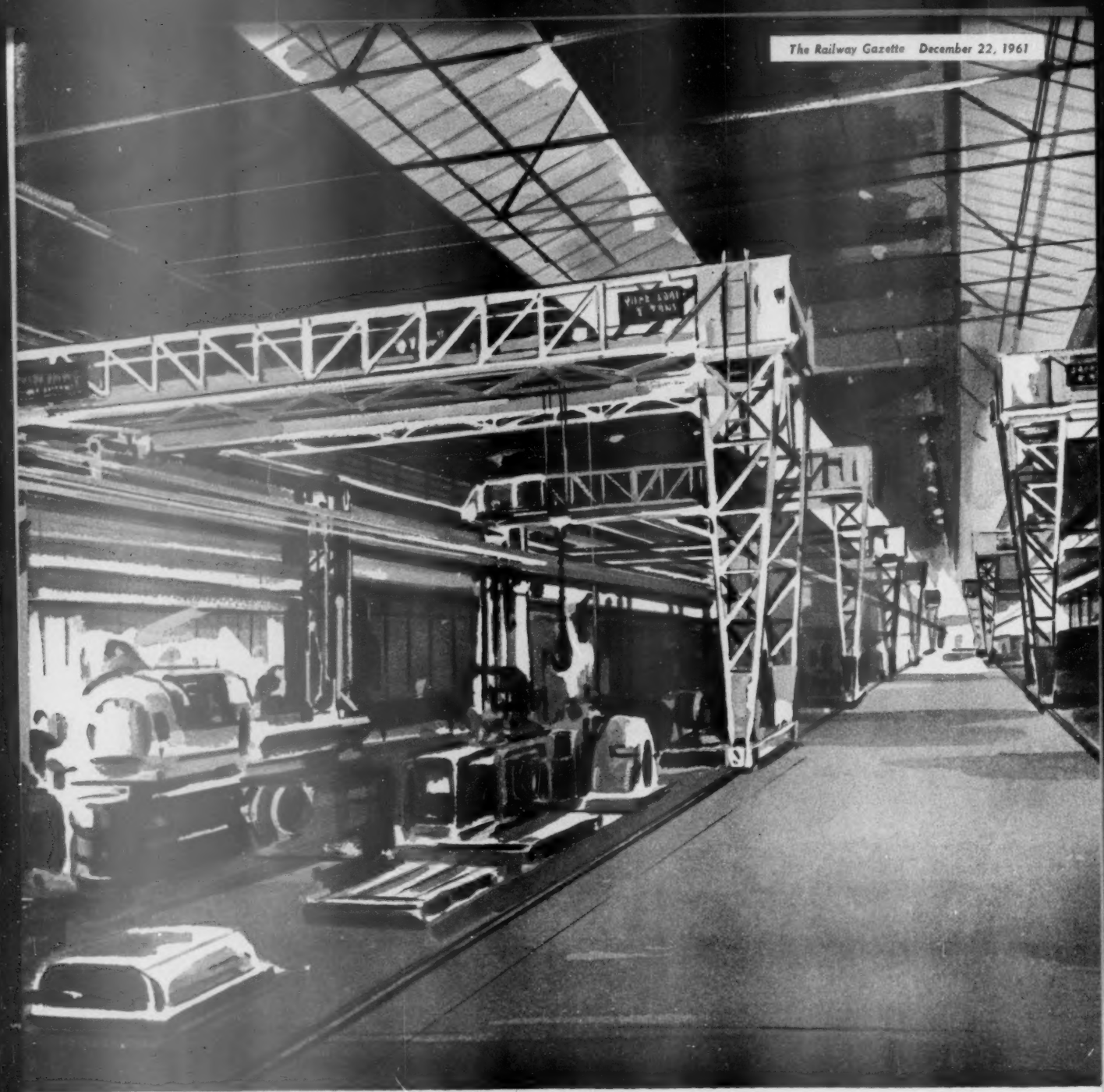

When movement means handling, Paterson Hughes have more experience than most in the design and manufacture of complete mechanical handling schemes for all industries.

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STOTFOLD: Windsor Works Stotfold Bedfordshire Telephone: Stotfold 481
Enquiries may be sent to any of the above offices
Also at Bristol Manchester Newcastle India and South Africa

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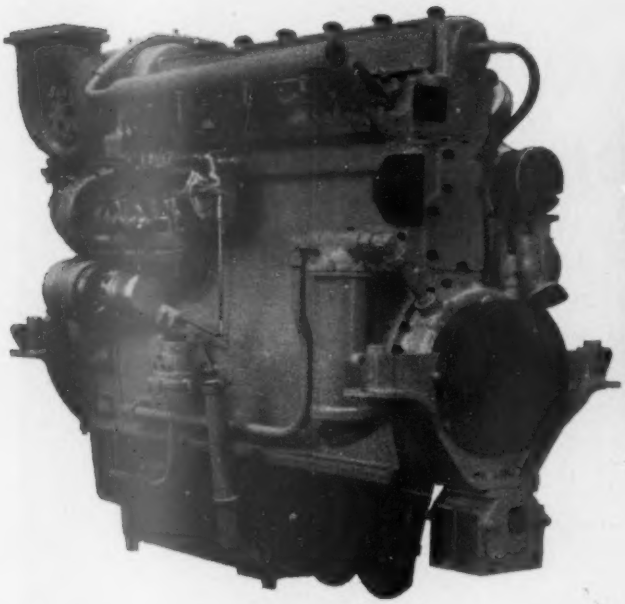

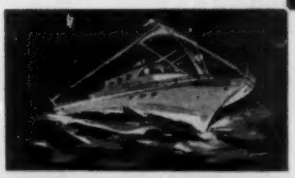

the engine which suits every situation

the engine which is given the most varied applications

175 CO

Semi-finished products for re-rolling and forging — The whole range of flat products — Merchant bars and sections — Wire-rods — All parts for rolling stock — Track material — Special pig irons and steels — High yield strength steels — Diesel engines from 200 to 25,000 hp — Line and shunting locomotives — Complete steam power plant — Equipment for nuclear power projects — Vessels of all types, motor or turbine driven, etc...

It is indispensable wherever a cheap source of motive power and a machine with reduced floor-space are required.

The 175 C.O. type engine has been designed so as to combine the qualities of robustness, long life and low running costs of the slow-speed heavy engines with the advantages of light-weight, reduced floor-space occupied and low purchasing costs of the high-speed engines.
The 175 C.O. type engine, such as it is designed and built, shows all these advantages.

— square engine with light connecting rod system and moderate speed,
— crankshaft rotating in roller bearings with crankcase-tunnel: perfect rigidity of the assembly,
— overhead camshaft: accurate control of the valve movements,
— large-capacity water pump: even temperature in the cylinder blocks and cylinder heads,
— double oil sump and double oil pump : contact minimized between oil and combustion gas, longer life for the oil bath,
— high rigidity of the cylinders and high water pressure: no cavitation, no erosion,
— all auxiliaries are gear-driven: no chain, no belt,
— the filtering of fuel, oil and air is of the highest efficiency,
— the Ricardo Comet V pre-combustion chamber permits the use of low grade fuels.

Whichever is the problem you are faced with, a 175 C.O. type engine is the solution.

Apply to our Departments; their specialists will help you efficiently.

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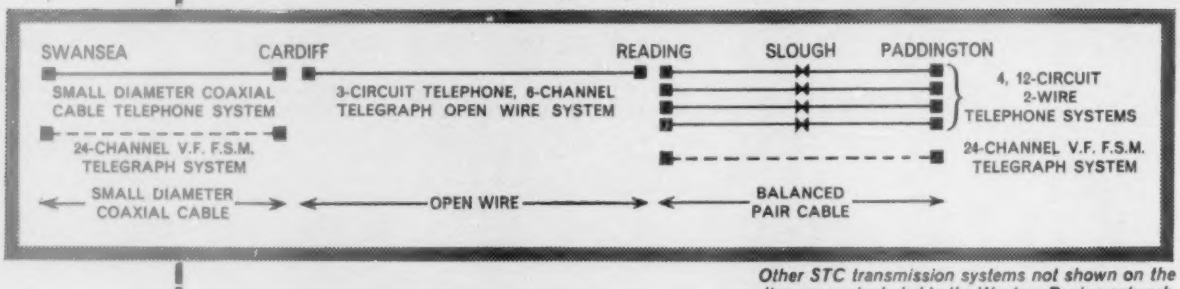
STC and railway modernisation.....

BRITISH RAILWAYS ARE INSTALLING STC ALL-TRANSISTOR TELECOMMUNICATIONS SYSTEMS AS PART OF THEIR MODERNISATION PLAN



Other STC transmission systems not shown on the diagram are included in the Western Region network.

Low power consumption and greater reliability of transistor circuits are features of STC transmission equipments now in use in a number of Regions of British Railways. The systems for the Western Region, shown in the diagram (above) illustrate the range of STC transistor equipment for use on different types of transmission lines. The small diameter coaxial cable system, now being installed between Cardiff and Swansea, uses a new type of small transistor repeater buried in the ground, which considerably reduces installation costs.

Details of STC transistor-telecommunications systems are given in publications:

C/2032	12-circuit 2-wire carrier-on-cable system
C/2033	300-circuit small diameter coaxial cable system
C/4006	Open-wire system for 3-circuit telephony/6-channel telegraphy
C/4007	24-channel V.F. F.S.M. telegraph system

61/17C

Standard Telephones and Cables Limited

TRANSMISSION SYSTEMS DIVISION NORTH WOOLWICH, LONDON

YOUR MAP OUT OF DATE?

Take a look at your map of the Colchester area; odds are 10,000 to one it's out of date. Does it show, for instance, the new railway line looping out from the London-Norwich main line and then curving back and under it? *That* is the new "dive-under" down line to Clacton.

And Colchester Station and environs look very different now—new island down platform, old station buildings demolished, improved up platforms and subways, new station approach and car parks. Track widening and new embankments extending from south of the station to nearly a mile to the north are also part of the Colchester reconstruction project carried out by The Cementation Company for British Railways —due for completion next year.

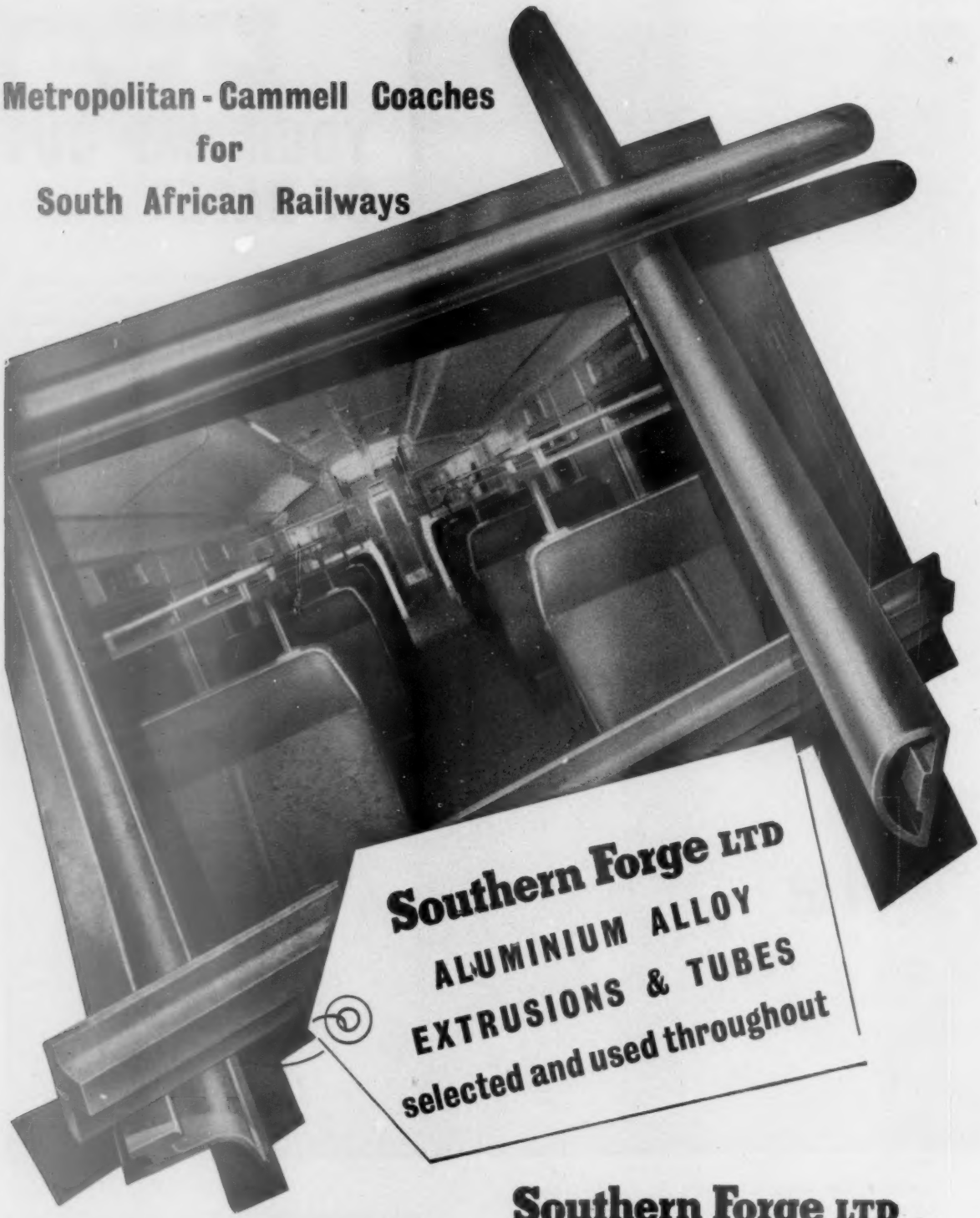
Photographs by Aerofilms Limited, Elstree.

The Cementation Company Limited
Civil Engineering Division (London and Overseas)
20 Albert Embankment, London SE1. And India, Pakistan, Middle East, Rhodesia, South Africa, West Africa, Australia, Canada, New Zealand, Portugal, Spain and Brazil.

Authority: British Railways (Eastern Region).
Work carried out under the general direction of
Mr. A. K. Terris, B.Sc., M.I.C.E.,
Chief Civil Engineer (Eastern Region), British Railways.

Cementation

Metropolitan-Cammell Coaches for South African Railways



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ALMINAL W.10 alloy extrusions and tubes were selected for their lightness and modern construction and were used throughout for windows, parcel racks and interior trim.

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METCALFE-OERLIKON

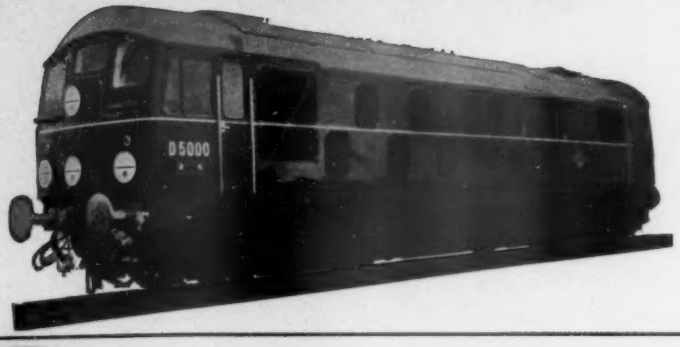
MODERN BRAKE EQUIPMENT

1160 H.P. Type '2' Diesel-Electric Locomotives.

Built by the Derby, Crewe and Darlington works of the B.T.C.

176 of these locomotives are to be supplied with Sulzer Engines and Power Equipment by A.E.I. Traction Division.

Metcalfe-Oerlikon brakes are also fitted.



1160 H.P. Type '2' Diesel-Electric Locomotives.

Built by the Birmingham Railway Carriage & Wagon Co. Limited.

47 of these locomotives have Sulzer Engines and Crompton Parkinson Power Equipment.

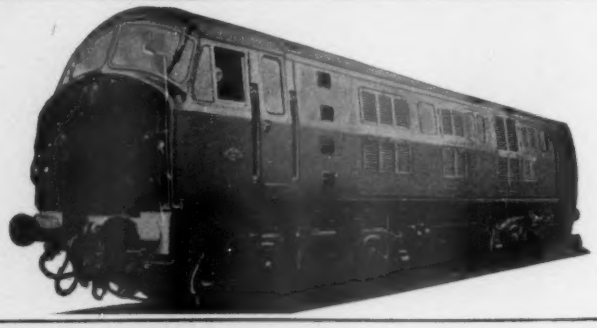
Metcalfe-Oerlikon brakes are also fitted.

1100 H.P. Type '2' Diesel-Electric Locomotives.

Built by the North British Locomotive Company Ltd.

They have N.B.L./M.A.N. Diesel Engines and General Electric Company Power Equipment.

Metcalfe-Oerlikon brakes are also fitted to **38** of these.



The above are just three of the many types of Main Line Diesel-Electric Locomotives now in service with British Railways and all are equipped with 'Metcalfe-Oerlikon' patent Vacuum Controlled Air Brake Equipment.

Undiminishing Performance
Light Weight
Friction Free Valves
Reduced Maintenance
Easy Installation

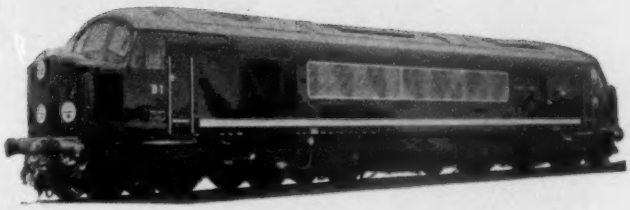
Suppliers to the World's Railways since 1870

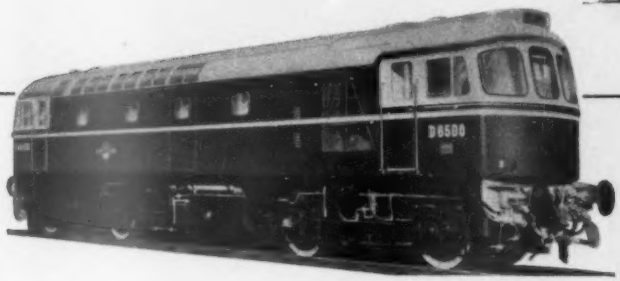
DAVIES & METCALFE LIMITED

METCALFE-OERLIKON

MODERN BRAKE EQUIPMENT

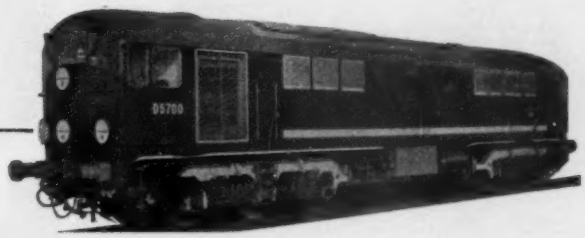
10 – 2300 H.P. Type '4' Diesel-Electric Locomotives. Built by the Derby Works of the B.T.C. and fitted with Sulzer Engines and Crompton Parkinson Electrical Equipment. 10 of these Locomotives are in service with British Railways and a further **137** are now building.

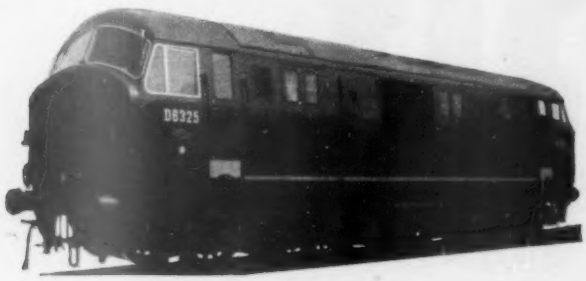




1550 H.P. Type '3' Diesel-Electric Locomotives. Built by the Birmingham Railway Carriage & Wagon Co., Ltd. and fitted with Sulzer Engines and Crompton Parkinson Electrical Equipment. **98** of these Locomotives are to be supplied, and these are arranged for working with either 'Vacuum' or 'Air' braked trains through a single Driver's Brake Valve.

20 – 1200 H.P. Type '2' Diesel-Electric Locomotives. Built by Associated Electrical Industries Ltd. and fitted with Crossley Brothers Ltd. engines. These Locomotives are now in service on British Railways.





52 – 1100 H.P. Type '2' Diesel-Hydraulic Locomotives being built by the North British Locomotive Co., Ltd. with N.B.L./M.A.N. Engines and Voith/North British Hydraulic Transmission.

THE ABOVE LOCOMOTIVES ARE EQUIPPED WITH METCALFE-OERLIKON BRAKE EQUIPMENT

JUST ANOTHER FOUR OF THE MANY TYPES OF MODERN MAIN LINE LOCOMOTIVES NOW IN SERVICE WITH BRITISH RAILWAYS. ALL ARE EQUIPPED WITH METCALFE-OERLIKON MODERN BRAKE EQUIPMENT.

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READILY AVAILABLE IN QUANTITY PRODUCTION

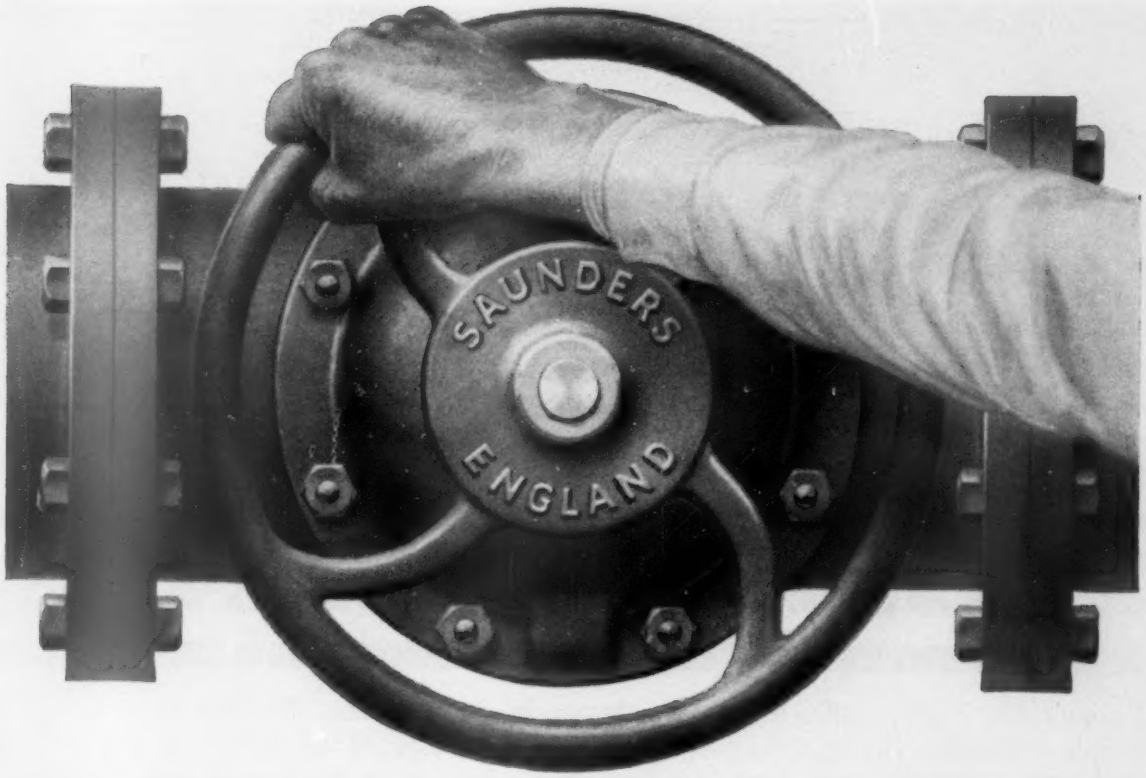
S. G. IRON (also called Nodular or Ductile Iron) to B.S. 2789 (1961) SNG. 37/2 (formerly Type 1) and SNG. 27/12 (formerly Type 2A).

DARCAST S. G. Iron castings to these specifications are made in large quantity production, and offer the following features:

Soundness and accuracy **Competitive prices**
Good machinability **Reduced machining allowances**

DARCAST service is second to none and we can draw on our wide experience to assist at all stages from development of prototypes to the final design.
Examples of the types of castings are Axle Boxes, Covers, and other railway equipment castings.

DARTMOUTH AUTO CASTINGS LTD.
Dartmouth Road Smethwick 40 Staffs.



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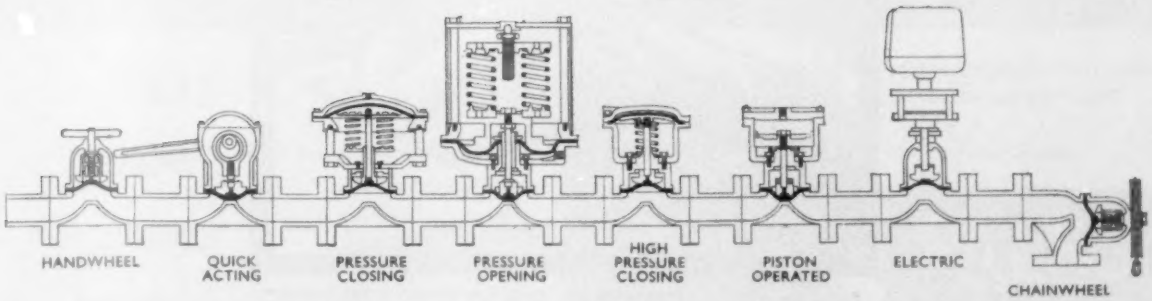

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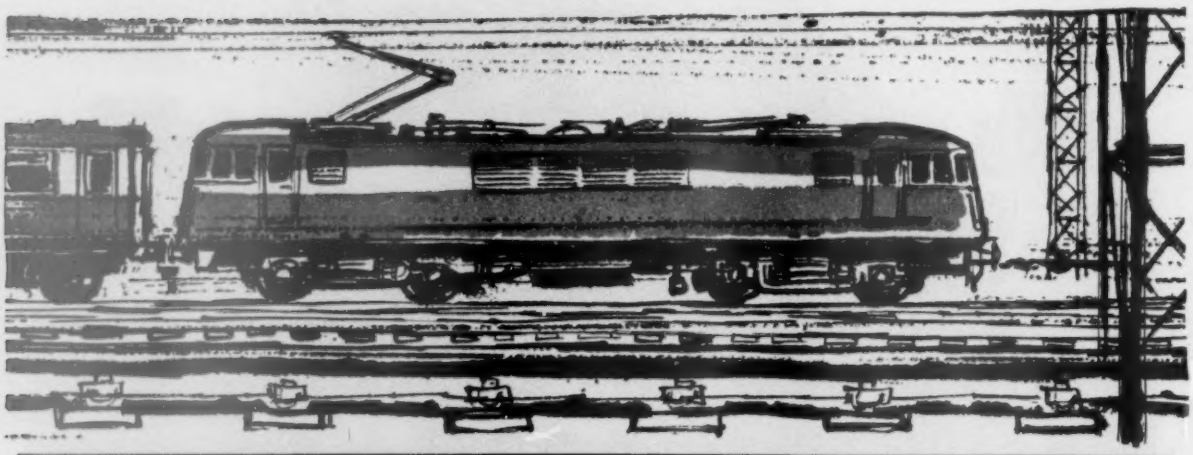

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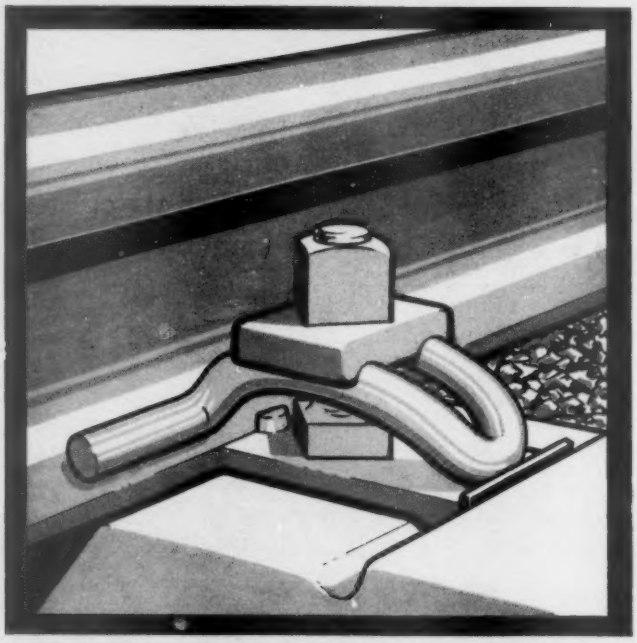

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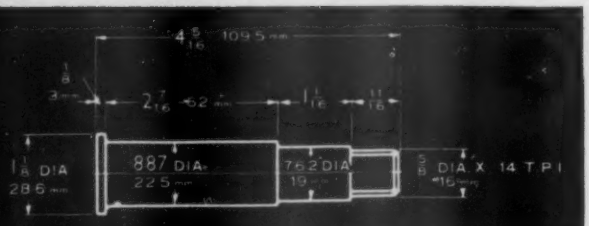

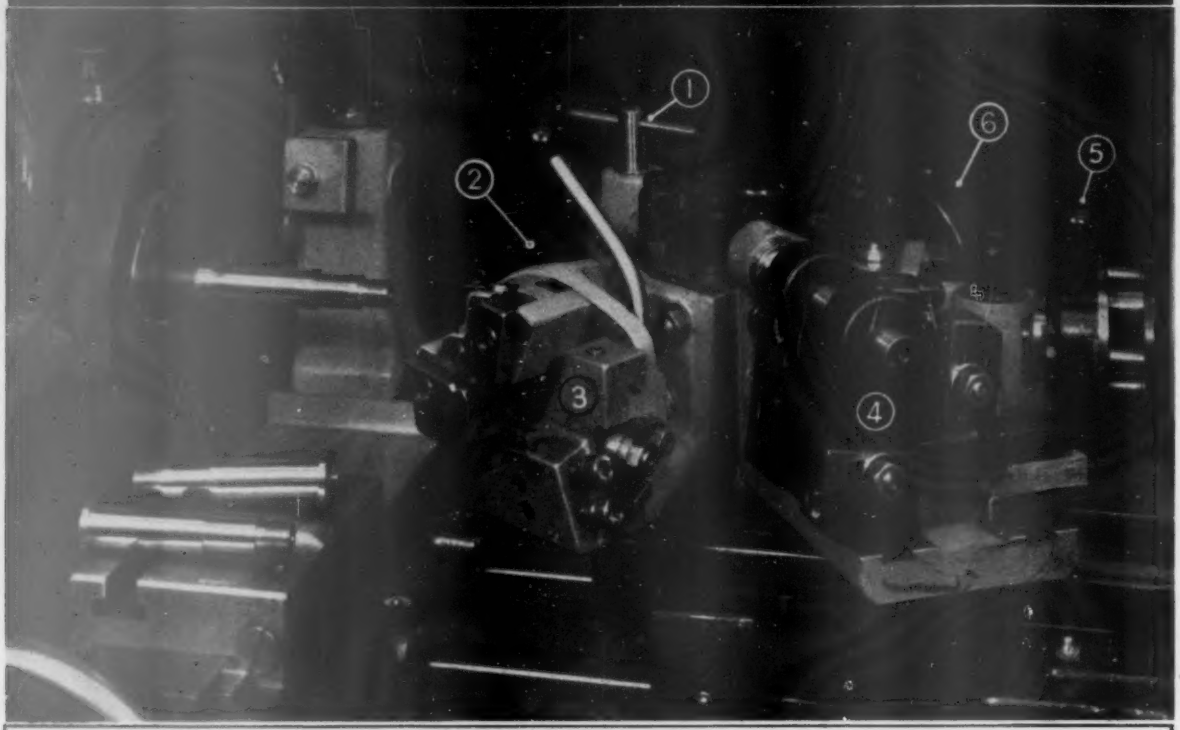

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	Hex. Turret	Cross-slide		Feet per min.	Metres per min.	Cuts per inch	m/m. per rev.
1. Feed bar to stop & close chuck	1	—	—	—	—	—	—
2. Centre drill	1	—	1110	—	—	Hand	Hand
3. Start turn	2	—	1110	343	104	Hand	Hand
4. Tangential roller turn ·887" dia.	3	—	1110	343	104	130	·195
5. Multiple roller turn 1⅛", ·762" & ·579" dias.	4	—	1110	343	104	130	·195
6. Thread roll ⅝" × 14 t.p.i.	5	—	1110	181	55	—	—
7. Roller end and chamfer	6	—	1110	181	55	Hand	Hand
8. Tangential part off	—	Rear	1110	327	100	Hand	Hand

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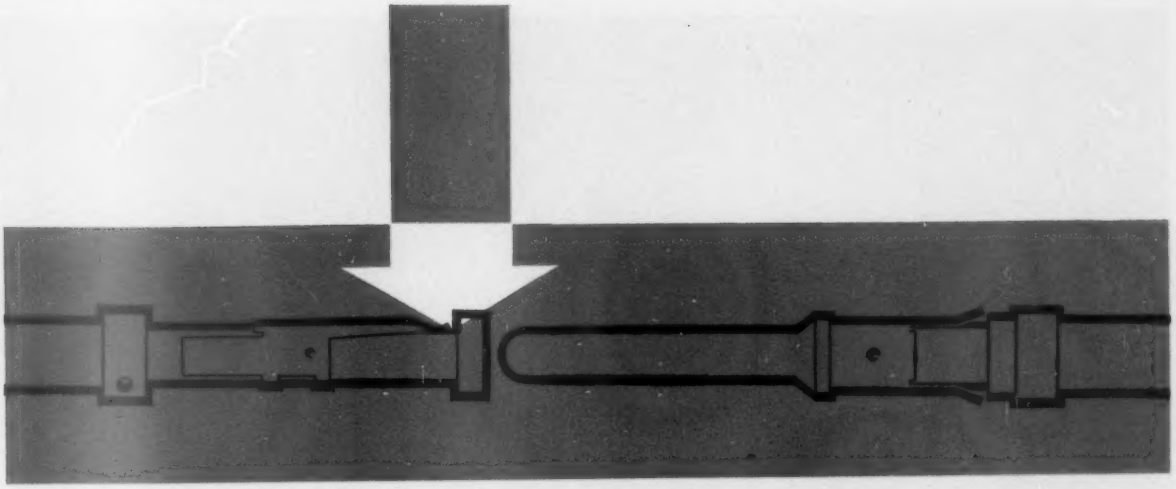

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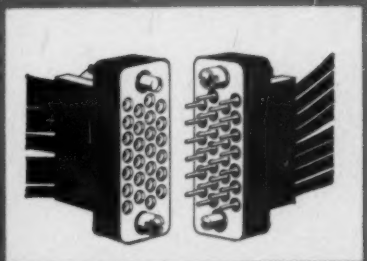

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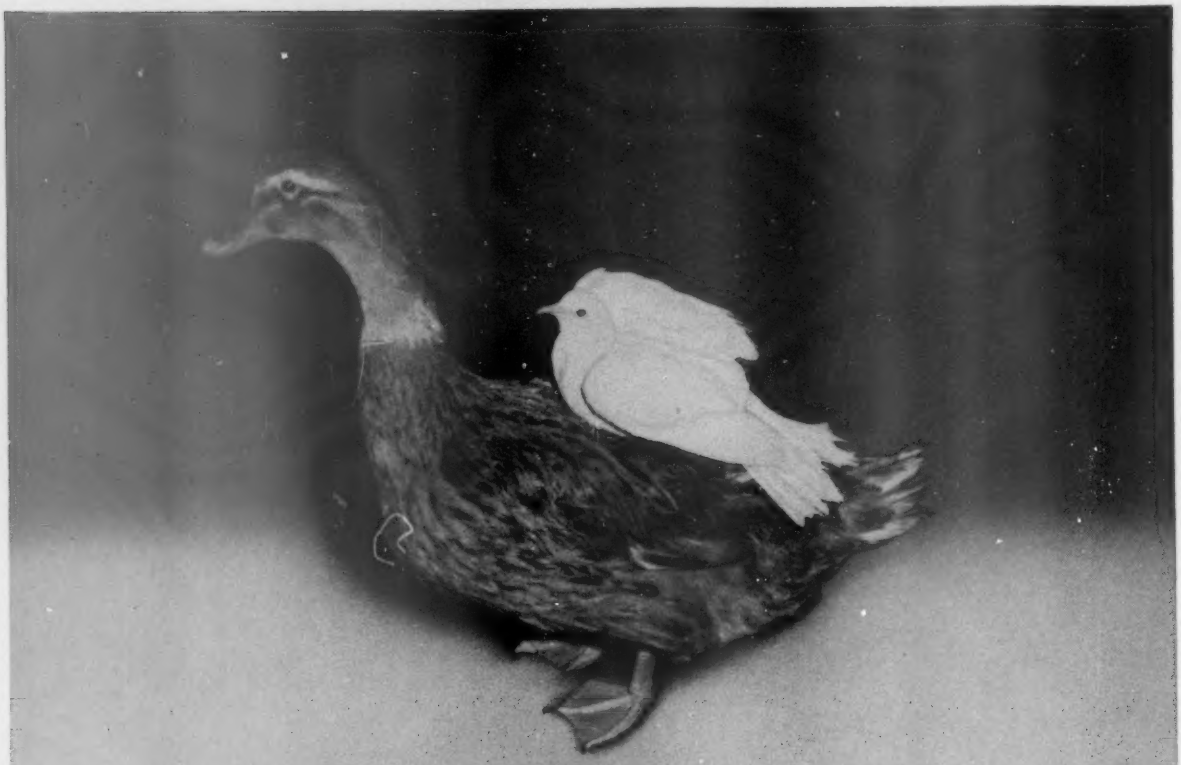

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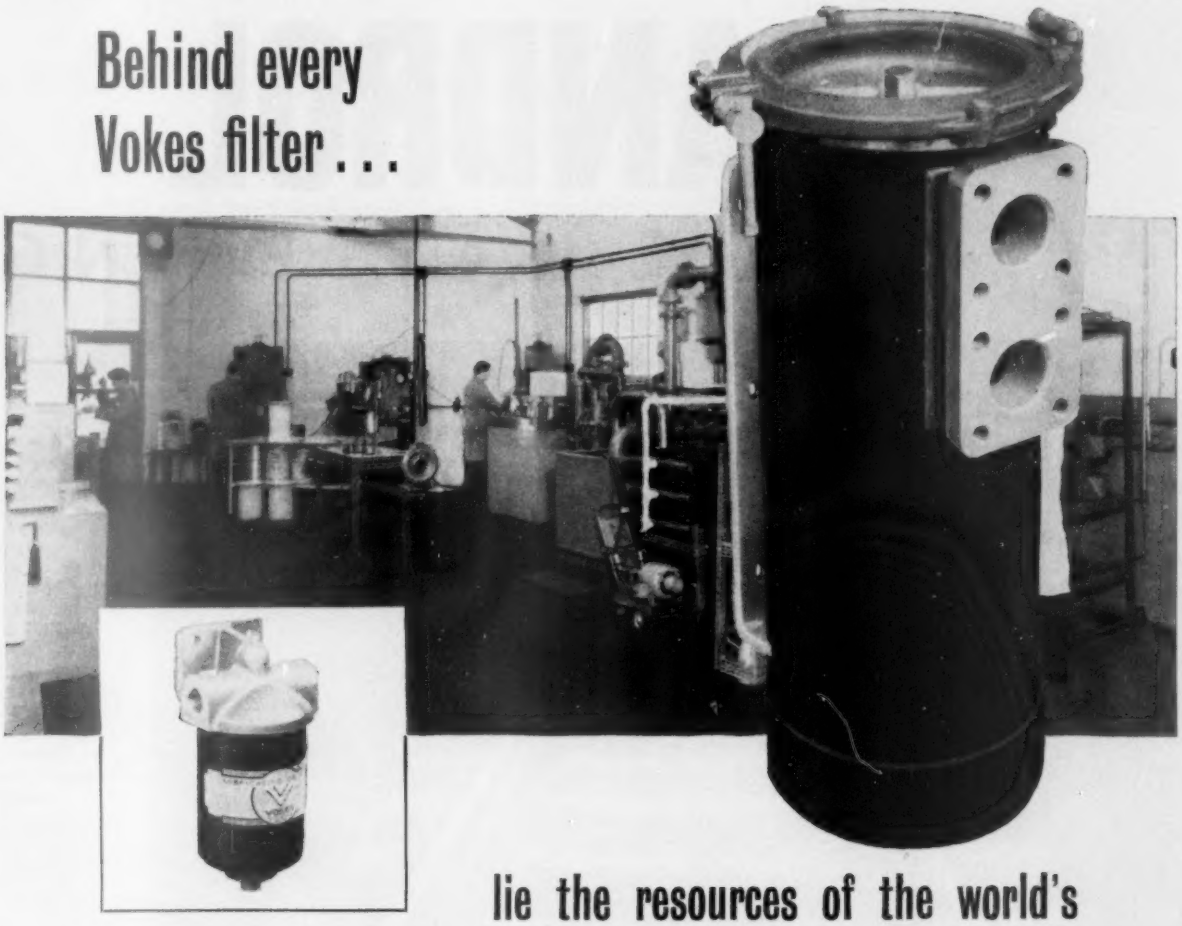

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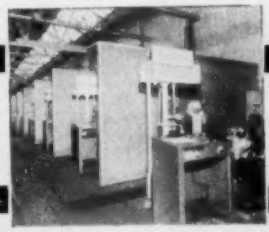
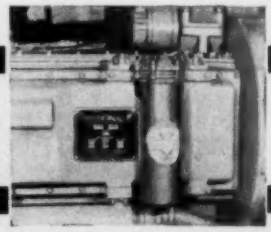
The two Vokes lubricating oil filters illustrated are part of a comprehensive range developed and tested in the fluid filter test laboratory shown above. They are guaranteed by Vokes for the complete protection of modern bearings and gear boxes.

Left is a lube oil filter, incorporating the unique Vokes by-pass device, designed to filter oil carried in external piping. Its outstanding, easily renewed VAF 66 filter cartridge has, compared with other similar size elements, greater sludge holding capacity, considerably improved flow characteristics and longer life. Above is a 'Top Servicing' lube oil filter, with VAF 2 filter element, featuring a single articulated clamp ring which considerably simplifies element renewal. Vokes lubricating oil filters are inexpensive on first cost, simple to install and the most economical in use.

Vokes 'Top Servicing' filter fitted alongside the Mirrlees engine of a Type 2 loco built for British Railways by Brush Traction Limited.



Two Vokes 'Top Servicing' filters serve the 24 bays of the Test Shop of Tilling-Stevens Ltd., a member of the Rootes Group.



Vokes lubricating oil filter fitted to a diesel engine manufactured by the National Gas & Oil Engine Co. Ltd.

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An international journal of management, engineering and operation

VOL 115 FRIDAY DECEMBER 22 1961 No. 25

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Leading the railways

In the present state of transition of British Railways it is not extraordinary that a good many should be turning their minds to the best kinds of personnel to be recruited to bring a fresh approach to the problem. In the House of Commons last week it was suggested that an effort should be made to find men in the Commonwealth who were free from political prejudices, but who had railway experience which might be very valuable to the proposed Railways Board. Mr. Charles Mapp, Labour M.P. for Oldham East, suggested that top men from the Canadian Pacific Railway might be considered and he also pleaded for the appointment of men who would not be afraid to stand up to the Minister and the Government if the occasion arose. He was speaking in support of a series of amendments to provide that the majority of members of the various boards to be established should be people with wide experience of, and capacity in, the particular form of transport involved, and in this he was supported by many members of the Opposition. The view of the Ministry of Transport was put by Mr. John Hay, Parliamentary Secretary, who said that what the railways needed at the present were men of wide experience and knowledge of top management of large-scale industry. He added that the railways already had enough expert railwaymen, but agreed that men from the Commonwealth would not be precluded from appointment under the Bill as drafted. That statement begs the whole question; it is difficult to know who would be precluded from appointment under the Railway Bill as drafted. What is required is more specific information on the actual qualities of people who are likely to be approached for positions of this kind. There is a considerable difference in the expertise needed to manage successfully a railway, particularly in a highly-industrialised country such as Great Britain, and that which is necessary to conduct successfully a large industrial undertaking in the ordinary sense of the term.

Mr. David Blee

The high regard in which Mr. David Blee, retiring General Manager of the London Midland Region, is held by his staff is being demonstrated by functions he has been invited to attend before he lays down his office. On December 13 he was entertained to dinner by Mr. A. N. Butland, Chief Civil Engineer, and his Assistants and District Engineers of the Region at Leamington. He has been entertained by Mr. R. L. E. Lawrence, Line Traffic Manager at Derby, and his Divisional and District Officers of the Midland Line; by Mr. A. E. Robson, Chief Mechanical & Electrical Engineer, and his Works Managers, and to dinner by the London Midland Chief Officers. Mr. E. G. Brentnall, Chief Signal & Telecommunications Engineer, and his District Engineers gave a dinner to Mr. Blee early this week, and Mr. Royston, the Line Traffic Manager, Crewe, and his Divisional and District Officers of the Western Line entertained him at luncheon. On December 29, Mr. M. G. E. Lambert, Line Traffic Manager, Manchester, and his Divisional and District Officers of the North Western Line will give a luncheon to Mr. Blee at Manchester. Other functions arranged by the General Office at Euston and by the Area Board are taking place.

Experience with diesel and electric traction

In March this year, Mr. E. S. Cox, Deputy Chief Mechanical Engineer of British Railways, visited South African Railways, Rhodesian Railways, and East African Railways & Harbours under the auspices of the United Kingdom Railway Advisory Service (U.K.R.A.S.), and gave a series of lectures on British Railways' experience with diesel and electric traction. The text of Mr. Cox's paper (which was reviewed in our May 19, 1961, issue), together with a verbatim report of the discussion which followed at Witwatersrand University, is contained in a booklet which has been published by U.K.R.A.S. Clearly and well set out in 32 pages containing also five full-page half-tone illustrations and a page of line diagrams, the booklet is attrac-

tively bound in a sturdy card cover carrying a tinted reproduction of an electric train. It is being sent to senior officers of railways administrations in all parts of the world and also can be purchased, price 3s., from H.M. Stationery Office.

Standard for electrical power

THE British Standards Institution has published a Standard Specification (B.S. 3435) to establish a common basis for electrical measurements when acceptance testing large electrical generators or prime movers. These tests on generators and prime movers, the output of which it may be convenient to measure *via* the medium of electric generators, generally prove costly to arrange and to perform. It is hoped that the standard will assist in unifying procedures and reducing costs. This standard goes beyond the existing standards for electrical instruments and meters, and lays down methods for their use during acceptance tests. It also establishes uniform methods of calculation to arrive at certain test results. It relates to measurement of electrical equipment of 10mVA. and above, whether operating on d.c. or on a.c. at any constant frequency between 25 and 100 cycles. According to the overall precision required during the tests, the standard allows for three different classes of overall accuracy of measurement, any one of which may be used for a basis for agreement on the measurement to be made. Account is taken of instrument errors during the tests and an appendix gives mathematical proof of the formulae that are used. Copies of this standard may be obtained from the British Standards Institution, Sales Branch, 2, Park Street, London, W.1, price 8s. 6d.

Universal decimal classification

A THIRD edition of B.S. 1000A has just been published. That this should happen within five years of the last one is evidence of a serious attempt by the British Standards Institution to keep the universal decimal classification abreast of scientific and technical advances. It also shows that a growing number of documentation centres, special libraries, and information sections of technical and scientific and industrial organisations are becoming adherents to the system. To keep abreast of important advances in other fields is where the universal approach of the u.d.c. comes into its own. Detailed documentation requires the use of tables published in full, or such full drafts as are available, and the best means to ensure that u.d.c. users are kept up to date is the issue at five-yearly intervals of a new abridgement listing the main changes. Many changes and new sections as well as footnotes referring to imminent further revisions are listed in a separate summary at the beginning of the new edition. Copies are obtainable from the British Standards Institution, Sales Branch, 2, Park Street, London, W.1, price £3 bound, £2 15s. unbound, postage extra to non-subscribers.

Berlin Underground

THE new north-south line from Leopoldplatz to Spicherstrasse on the Berlin Underground, which is described in this issue, gives some relief to West Berlin passenger transport, many flows of which have changed their directions since the war and, in a sense, parallel those alterations in traffic flow found in Western Germany itself. The whole operation of Berlin Underground traffic has been upset since the recent rigid enforcement of the frontier or sector boundary. Reference to the map on page 717 will show that the erstwhile through trains on the Wittenburgplatz-Alexanderplatz line now terminate at Gleisdrieck in the Western Sector, and at Potsdamer Platz in the Eastern Sector. For the moment, Warschaver-brucke Station is closed. On the Tegel-Tempelhof and Tegel-Grenzallee services through trains continue to be permitted but are available to Western Sector passengers only and do not stop between Reinickendorf and Kochstrasse.

Restored working at Mombasa

AFTER the recent floods, the East African Railways & Harbours is making an intensive effort to clear the accumulation of goods awaiting rail transport between Mombasa and up-country stations. Priority was first given to tank wagons but as this need is over, the clearance of dry goods is occupying the attention of the railway. It is hoped that at the end of three weeks the position will have been restored to normal. To facilitate the work of clearance, passenger train working on the line between Mombasa and Nairobi has been restricted to one train a day in each direction. The full passenger train service will be restored as soon as possible. When the regular flow of exports is resumed both current and accumulated import consignments will have to be forwarded simultaneously to keep the port of Mombasa from becoming congested. Exporters have been advised that they should consign rail-borne exports *via* private warehouses. This is to obviate the receipt of a large tonnage of nominated consignments in the port for ships, berths for which have not yet been determined, as this would prove to be an embarrassment until the accumulated import cargo has been reduced.

Railway Commissioner's conferences

THE next Australian and New Zealand Railways Commissioners' Conference will be held in New Zealand during February, 1962. This will be the second of these conferences held in New Zealand in over 60 years of existence. Among those who will attend will be Commissioners from the Queensland, New South Wales, Victorian, South Australian, Western Australian, and Commonwealth systems, and the General Manager of the Tasmanian Government Railways. The conference agenda and the minutes are not generally available but it is understood that recommendations made by the Transportation, Locomotive, Way & Works, and Signalling Officers at the last conference held in Wellington will be dealt with, together with a number of matters of policy. These conferences had their origin more than 60 years ago. In 1895, a conference of the Railway Commissioners of New South Wales, Victoria, and South Australia was held in Melbourne for the purpose of abolishing differential freight rates existing between the respective colonies and since then conferences have been held to discuss and make recommendations on matters of mutual interest.

Rising traffics in Switzerland

FIGURES to the end of the third quarter of 1961 show that the number of passengers carried by the Swiss Federal Railways in the first nine months of the year increased by 4·4 million, reaching 172·8 million. Receipts from passengers rose by Sw.fr.19·5 million, to which internal traffic contributed Sw.fr.13 million and international traffic Sw.fr.6·5 million. Goods traffic also improved, increasing by 1·12 million *tonnes* to 22·8 million *tonnes*, and producing Sw.fr.24·9 million more revenue. Although working expenses rose by Sw.fr.15·1 million, the surplus of Sw.fr.252·2 million was Sw.fr.28·4 million higher. The railways have benefited from a vigorous effort in public relations based on the introduction of the new T.E.E. multi-system electric trains described in our issue of July 28 last. After the inaugural run, facilities were given to individual journalists to visit and inspect the trains, and both literature and illustrations concerning them were distributed to the press on a large scale. A documentary film has been made on the subject which is being shown in the current winter season. The administration has successfully engaged the interest of other film producers, notably those in Britain and America. Producers from those countries have embodied material which has been supplied by the Swiss Federal Railways, in their own documentaries.

Improved clearances in America

AN ARTICLE on page 715 of this week's issue describes the work done by the Chicago, Milwaukee, St. Paul & Pacific Railroad to enable it to handle outsize loads. Another railway to which we have made recent editorial reference—the Baltimore & Ohio Railroad—as part of its overall improvement policy to attain maximum efficiency and the greatest possible return on capital, has been following a programme of widening and raising bridge and tunnel clearances, the aim being to allow unhampered movement of piggyback traffic. The complete programme involves the removal of 60 tunnel and bridge obstructions and by the end of 1962 almost all the main lines of the B. & O. system will open to the 13½-ft. high piggyback trailers. Wherever possible, roadbeds are being lowered and tracks realigned. This has eliminated the necessity of raising tunnel and bridge heights, a far more costly and time-consuming method. A major project has been the lowering of the track at North Vernon, Indiana, to accommodate 18½-ft. multi-level rack wagons between a motorcar assembly plant at Cincinnati and East St. Louis. A great deal of this work has had to be carried out without interfering with the day-to-day running of main-line traffic.

A new timetable for East Anglia

NOTABLE changes planned for the introduction of the summer timetable of the Great Eastern Line of the Eastern Region of British Railways, from June 18 next, will make the Colchester main line one of the fastest in Great Britain. With the exception of Brighton, Colchester itself will enjoy the most frequent service of any town more than 50 miles from London; and for the first time in history the 51·7 miles from Liverpool Street to Colchester will be covered by five trains daily in 50 min. This substantial advance is being made possible by the completion of the electrification work between Chelmsford and Colchester, which for some time past has made necessary an addition of 10 min. or more to all express train times. Had it not been for the unfortunate delay in the delivery of the electric rolling-stock for the Liverpool Street to Clacton-on-Sea and Walton-on-the-Naze service, the acceleration might have been even greater; as it is, introduction of the complete programme must wait until 1963. Several of the peak-hour Clacton trains will be worked throughout by electric sets from the outer suburban pool, and fast running by the remainder will be achieved by the use of 1,750 h.p. diesel-electric units. These will be employed also on some of the lighter London-Norwich duties, but all the harder turns will be worked by 2,000 h.p. diesels.

Between Liverpool Street and Norwich, not only are the 2-hr. timings to be restored, but the 2-hr. trains will run at 2-hr. instead of 3-hr. intervals, so that there will be six Down and five Up daily, instead of the former four in each direction. Going Down, these trains will be at every odd hr. from 9.30 a.m. to 7.30 p.m., and coming up at every odd hr. from 9.40 a.m. to 5.40 p.m. inclusive. Each is to call at Colchester as well as Ipswich, with the exception of the 5.30 p.m. Down, which will omit its previous Chelmsford, Stowmarket, and Diss stops and arrive at 7.30 p.m., 25 min. earlier than now. The present 6.30 p.m. Down "East Anglian" will become one of the intermediate express workings, but the 7.30 p.m. will provide a new 2-hr. late-evening departure, reaching Norwich 50 min. earlier than its present time.

Coming Up, the only train to miss Colchester will be the 7.40 a.m. from Norwich, calling at Diss, Stowmarket, and Ipswich and then non-stop to Liverpool Street, arriving at 9.53 a.m. The expresses at the intermediate hours will stop at Chelmsford, Colchester, Manningtree, Ipswich, Stowmarket, and Diss, and take 2 hr. 25 min. Down and 2½ hr. Up, in both cases 5 min. faster than before the electrification slow-down. In the Up direction they will leave Norwich at 20 instead of 40 min. past the hr., so that with the 2-hr. Up trains they will give an express service from Colchester to Liverpool Street at 47 min. past each hr. throughout the day, and at very nearly even hourly intervals from Ipswich also.

A development of the greatest importance affecting Yarmouth is that a number of the London-Norwich expresses will be extended to and from Yarmouth Vauxhall. Since the direct line between Yarmouth and Beccles has been closed, Yarmouth has suffered in time by its through trains having to travel *via* Lowestoft, reversing there; and at most hours of the day it has been quicker to use the multiple-unit diesel trains to and from Norwich, changing there into and out of the London trains. From June 18 the 3.30, 4.30, 5.30, 6.30, and 7.30 p.m. expresses from Liverpool Street will continue to Yarmouth, the 2-hr. trains taking about 2 hr. 40 min. for the through journey; and the 7.40, 8.20, 9.40, and 10.20 a.m. from Norwich will start from Yarmouth Vauxhall. By this change, Cromer and Sheringham will lose their last through service (the present "Broadsman") to and from London.

Lowestoft will continue to have through trains to and from Liverpool Street, *via* the East Suffolk Line, at 6.40 and 7.30 a.m. Up, and 4.50 and 6.10 p.m. Down. All four will call only at Colchester between Ipswich and London, and the journey times will range between 2½ and 2¾ hr. Throughout the day multiple-unit diesel trains will run at 2-hr. intervals between Yarmouth, Lowestoft, Beccles, and Ipswich, connecting there with the Norwich 2-hr. trains, and so giving a fast service between Liverpool Street and stations on the East Suffolk Line; at the intervening hr. there will be diesel workings between Yarmouth Lowestoft, Beccles, and Halesworth.

The Clacton even-interval trains will start from Liverpool Street on the hr. from 8 a.m. to 4 p.m. Down, and from Clacton at 35 min. past the hr. from 9.35 a.m. to 6.35 p.m.; these trains will call at Shenfield, Chelmsford, Witham, Colchester, and Thorpe-le-Soken, and alternate trains in addition at Hatfield Peverel, Kelvedon, and Marks Tey. The usual ample commuter service will operate through the peak hr., with the "Essex Coast Express" (5.27 p.m. Down and 7.56 a.m. Up) taking no more than 86 and 85 min. for the journeys out and back. Electric trains, calling at Romford and all stations beyond, will run at hourly intervals between Liverpool Street and Chelmsford through the off-peak period, each alternate train continuing to Hatfield Peverel and Witham.

An alteration of interest is that the through boat train from Parkeston Quay to Sheffield, Manchester, and Liverpool is to start 20 min. earlier, at 7.40 a.m. (ahead of the 7.50 a.m. "Hook Continental"), thereby preceding through Ipswich the morning train from Colchester to Newcastle, which will start 35 min. later than now, at 7.50 a.m. For the first time since the war, this will restore a direct Continental connection to the North of England, similar to that which is now given by the same two trains in the southbound direction. The "Hook Continental" itself will be accelerated to a time of 85 min. from Liverpool Street to Parkeston Quay, and 83 min. in the Up direction. The Great Eastern Line is to be congratulated on the outstanding enterprise of this new timetable.

Are our ports competitive?

DO United Kingdom port charges place British exporters at a disadvantage, as compared with Continental exporters? As with shipping charges, which were discussed here a fortnight ago, there is no conclusive answer. Yet there is certain *prima facie* evidence that our port charges tend to be higher than those on the Continent.

In a recent paper read by him to the Institute of Transport, Lord Simon, Chairman of the Port of London Authority, instanced one or two factors which operated to our detriment. He pointed out that British ports with a large tidal range stood at an insurmountable disadvantage with the nearby Continental ports. Some of our ports could not be adapted to take the bigger ships now in use. There had been no co-ordination

in the past between port authorities and those responsible for providing rail and road access. In the long run users had to pay for unused port capacity.

It is right to say that it is difficult enough to compare one British port with another, let alone with those on the Continent. The reason is that each port has its own custom as regards the division of its costs and charges between exporter and ship-owner. At one port the exporter pays all the handling charges up to the " hook of the ship," that is when his goods are lifted bodily off the quay and into the ship's hold. At another port, the exporter pays only up to " the back of the shed," that is until his goods are unloaded off the railway wagon or lorry.

In each case the ship-owner pays the rest, and ship-owners do not work for nothing. This means that the cost of handling at the docks, whatever it is, is merged in total shipping rates, which in turn are governed by Conference agreements.

In arriving at its rates a liner conference will take into account all its charges and, so far as dock charges are concerned, it may well average one port against another, imposing surcharges to meet temporary abnormalities. Again a particular cargo line usually uses only one or two British ports, of which it naturally knows the procedure. Even so, it is clearly difficult for many exporters to know their real dock charges and how they are paying for them.

Exporters not only want reasonable dock charges. They also want certainty of shipment at the appointed time. Here is another difficulty with which British exporters are faced.

Delay often occurs at our ports because of congestion, of which there are three causes. First, the increase since before the war in the volume of British exports. Next the change-over in internal transport from rail to road. Third, at many ports the absence of any post-war extensions, as distinguished from repairs of war damage, and modernisation.

The expansion in exports can be illustrated by quoting the figures issued by H.M. Customs. In 1938 imports were valued by them at £873 million, and in 1959 at £3,254 million. Here the increase in value is no more than can be explained by the intervening decline in the purchasing power of the pound. Exports have risen in value from £467 million in 1938 to £3,241 million in 1959, that is by nearly seven-fold. This is much more than can be ascribed to monetary changes alone. Incidentally, these figures underline the fact that our current balance-of-payments difficulties are mainly due to the decline in our invisible exports.

When our ports were developed, they were built on the assumption that most of their traffic would be dealt with by rail. This was comparatively simple, for rail traffic can be dealt with a train at a time, and train movements are known in advance. Lorries arrive by road at any time, and are frequently kept standing about until their contents can be handled. This adds to the congestion, and so to general delay.

The two chief " exporting " ports are London and Liverpool. Here, at the most only one-fifth or perhaps one-quarter of the outward traffic arrives by rail. By contrast 50 to 60 per cent of Southampton's outward traffic arrives by rail. This is because of a special factor, namely that one leading shipping line issues by arrangement with British Railways through bills-of-lading to cover transit by both rail and sea. This is a practice which could usefully be extended.

There is the lack of post-war extensions at many of our ports. Admittedly it might be difficult to find the necessary land without going too far afield. When the lack of extension is set beside the growth in our exports, it is easy to detect another cause of congestion.

Labour difficulties are often blamed for delays—again with some justice. Restrictive practices admittedly exist and these reduce the benefits to be obtained from the use of modern appliances. There is also the difficulty of obtaining additional labour, as and when required.

It is questionable whether the ports ought not to take on a larger number of permanent workers on a weekly basis, as distinguished from the daily allocation of workers from the port's pool. Recently the port authorities were asked what they could do in this direction. There has not yet been time for them to give an answer, and in fact their reports are due by January 1.

Again the Rochdale Committee are inquiring into the major British ports. Its report is not yet expected, but the evidence so far published underlines existing labour problems, and the short-comings of the existing dock labour scheme. If all this is substantiated, it is bound to militate against our exporters in comparison with those using Continental ports—except, of course, some Continental ports may have troubles of their own.

Nevertheless, unless ports on the Continent get some form of subsidy, it would be wrong to say that they were ahead of us. For example, comparisons with Rotterdam are partially vitiated by the fact that much of their traffic takes the simple and easy form of bulk discharge over the ship's side into 1,200-ton Rhine barges alongside. So far as general cargoes are concerned, it is not easy to obtain a direct comparison between British and Continental ports.

The conclusion is that so far as British ports are concerned there is room for improvement in more ways than one. What can be done, and how to do it, is another question to which there is no easy answer. One thing must be said: The efficiency of our ports and the level of their charges is of vital importance to our export trade.

The work of the railway policeman

ORIGINALLY created to control the depredations of labourers working on the construction of the line and to meet a need emphasised by the death of Mr. William Huskisson, then M.P. for Liverpool, at the opening of the Liverpool & Manchester Railway, the first railway policemen were special constables responsible to the local Justices of the Peace. In a paper read before the Institute of Transport in January, 1961, Mr. L. James, Chief of Police, Eastern Area, British Transport Commission Police, related how the railway constable had graduated from being stationed at intervals of a mile and a half along the track as the first form of signalling to an enforcement officer of railway laws and bye-laws. The Railways Act, 1921, had the effect of creating four railway police forces to correspond with the amalgamation of the railways into four main groups and the Transport Act, 1947, welded these into a single entity of nearly 4,000 men responsible not only for policing the railways but also for all the undertakings of the British Transport Commission. From 1947 until 1959, the Force was divided into seven geographical areas which bore no relationship to the management of the industry. In 1959, this arrangement was changed to division on a Regional basis. In Mr. James' opinion, this last arrangement is a great improvement on its predecessor as it simplifies managerial liaison and relates the jurisdiction of the Area Police Chief to the commercial organisation of the particular Region. Today, the B.T.C. constable is appointed under Section 53 of the British Transport Commission Act, 1949, and is vested with the status of a Common Law constable. He may arrest without warrant persons suspected of committing a felony, and may detain any person so arrested provided he produces him promptly to a Justice of the Peace. His powers to investigate crime stem from the same Common Law power to arrest felons—the civil police enjoy no statutory monopoly of criminal investigation. As in criminal law, so in civil law he fulfils a similar role to the civil policeman.

The duties of a railway policeman fall into three main categories; the preservation of law and order in railway stations, ports, and dockyards; those duties concerned with train, vessel, or road vehicles in motion, and an assortment of duties concerned with the protection of the Commission's interests in a variety of ways. He must be ready to prevent crime, control queues, taxis, and road traffic generally. He must keep an eye on the waiting room, the refreshment room, and

premises in general to restrict their use to the proper persons. He must also tackle hooliganism and vandalism and stop trespass, which cannot be ignored if the Commission is to escape claims for accidents to children and others who are attracted to railways and docks.

So far as goods traffic is concerned, the vast concentration of goods held on hand at stations and depots has to be protected. This is a constant temptation to the dishonest and much of the routine patrol work is directed to the safe custody of goods in the Commission's charge.

In discharge of his duties the railway policeman is confronted by two great difficulties. First, it is almost impossible to isolate the crime: with the abolition of goods in transit the ability to locate a crime in a particular place has disappeared. Secondly, losses are frequently not reported until many weeks after they have occurred.

Another problem which faces the railway policeman is the mixing of civil with legal criminal concepts. The borough or county constable is concerned only with criminal law considerations but for his railway counterpart the situation is not so simple. If a passenger falls from a train, he regards the police officer to whom he reports the matter as a disinterested officer of the law and may not wish his statement to be freely available to the Commission. When a railway policeman deals with a road traffic prosecution he may find himself involved in a complicated legal argument as to whether the road in question is one to which the public legally have access. When he wishes to eject an alleged trespasser, he may have to decide whether the possession of a railway ticket gives the offender the status of a *bona fide* passenger. All this means that the railway constable must feel his way more carefully in many respects than must a civil policeman.

Transport of goods by road

THE necessity for the quicker turn round of road haulage vehicles was stressed by Mr. P. S. Henman, Chairman of the Transport Development Group Limited, when delivering the Henry Spurrier Memorial Lecture to the Institute of Transport on December 11. The high cost of waiting and loading was a vital factor to the haulier and the time spent at premises has doubled since before the war. Indeed, there now is more waiting time than loading time. If waiting time could be cut and the productivity of vehicles increased this would have an important effect on costs. Mr. Henman suggested that if productivity were doubled, haulage costs and rates could be cut by half.

In emphasising the importance of a knowledge of costs, Mr. Henman said that, armed with this knowledge, it was possible to see that services were provided without waste and with effective use of capital used. The yardstick of profitability must be regularly applied—there was no other sure guide. This did not imply that every transport operation should show a profit but if it did not the reasons must be known and justified. It was little short of a national disaster that the pre-eminent requisite of profitability had been overridden until, amid a welter of cross-subsidisation and Government subsidy, transport had been tossed in and out of the political cockpit, and was retarded from being the economic, independent, and efficient lubricant of the economy which was its rightful function.

On the subject of the future of the railways, Mr. Henman contended that only efficient railways would be of any use to traders and that it was probable that railways were more likely to be efficient in so far as their operations were carried out under conditions of full and fair competition with other forms of transport. He hoped that railways, now relieved of a great part of the historic cost of their track, would feel that they were able to compete with other forms of transport on something like equal terms.

For the carriage of general goods over short and middle distances, road was pre-eminent and was likely to remain so. Over longer distances the road haulier had secured his position by the personal service which he provided rather than by any inherent advantage in the nature of his operations and the future pattern of operation in this field was more open to question. The road haulier would certainly fight to enlarge his share of the market.

Tasmanian Transport Commission

A SLIGHT increase to £492,472 in the loss sustained by the Tasmanian Transport Commission on all operations except traffic control is recorded by Mr. C. E. Baird, the Commissioner, in his annual report for 1959-60, a copy of which he has sent us. Although £89,993 more than the 1958-59 loss, it was well under the £646,703 loss in 1957-58. The additional loss in the latest period was substantially below the £136,000 extra burden of wages and salaries during the year.

The following is a summary of operations:—

	1958-59 £	1959-60 £
Net loss on railway services	889,086	932,893
Expenditure on administration and public vehicle control	55,895	77,150
Net receipts, road passenger services	2,478	639
Net receipts, road goods services	23,037	7,754
Loss for year	402,479	492,472

Operating results for the 3-ft. 6-in. gauge railways were as follow:—

Revenue	2,706,594	2,807,823
Working expenses	2,971,494	3,112,377
Loss on working	264,900	304,554
Depreciation	243,640	250,550
Interest	380,546	377,789
Deficit	889,086	932,893

Revenue from goods, minerals, and livestock increased by £100,268 to £2,526,734 in 1959-60. There was a rise in tonnage to 1,190,882, compared with 1,137,685. Working expenses of £3,112,377 were 110·86 per cent of earnings. Total train-mileage was higher at 1,550,493 against 1,539,343. With fewer passengers carried, there was an equivalent drop in income from that source.

Diesel locomotive mileage went up by 88,644 to 1,763,292, while steam fell 49,981 to 326,796. Four diesel-mechanical and two diesel-hydraulic locomotives were brought into service and 12 steam locomotives were written off during the year. The number of locomotives in service at June 30, 1960, was 96, while 10 were stored and out of traffic for the whole year. The policy of replacing steam power by diesel is continuing, and Launceston workshops is constructing three 800-h.p. diesel-electric locomotives, the first of which is expected to be in service late in 1961.

Revenue from road transport was slightly up at £144,944, against £139,603. The major traffic feature of the year was the installation of one-way traffic in Hobart, where there was an overall improvement in traffic flow.

An airstrip has been built at Strahan, and it is proposed to build an aerodrome at St. Helens.

Mr. Baird refers to the buoyancy of railway revenue in recent years following reorganisation and elimination of train services and the intensified drive for new business. In the four years to 1959-60 there was an average annual advance in revenue of £70,000, although railway freight rates and fares have not been increased to any substantial extent since 1952. Since then, the average wage per employee has risen from £640 to £952 a year, the cost of salary and wage increases since 1952 amounting to £800,000 annually. It is becoming increasingly difficult to absorb higher costs by improvements and economies in railway working, although the Commission is doing everything possible to keep railway losses to a minimum.

A vigorous campaign for new business is meeting with considerable success, and additional facilities are being provided to handle greater traffic. Density is now nearly twice as great as ten years ago. Some increases in freight rates may have to be made.

LETTERS TO THE EDITOR

THE EDITOR IS NOT RESPONSIBLE FOR THE OPINIONS OF CORRESPONDENTS

RAILWAYS INTO ROADS

November 18

SIR, The interesting "Railways into Roads" discussion has passed by one problem which in fact is the crucial issue: the "stop." When a railway is built the first consideration concerns the station platforms, the marshalling yards, loading ramps, and so on. Then the stations are connected by one or two lines, on crowded parts by more lines and the necessary number of points. It is well known that the intermediate stop is decisive for the maximum number of trains. The time a train requires for coming to a standstill, unloading and loading, then clearing the platform is the bottleneck.

If we contemplate the present ideas about road traffic we see that up to now the authorities have tried to combat bottlenecks caused by crossings, round-abouts, or whatever else may cause a bottleneck, by widening the roads leading to the bottleneck with the inevitable result that the traffic jams increased because of easier access to the bottleneck. Similarly, in the U.S.A. a well-known city had the bright idea to combat daily traffic jams at one point of entry to the inner city by building a hugh garage block in a side street, with the result that the jam shifted to the side street and the entry to the garage.

For the question of converting railways into roads it is fairly irrelevant whether a railway can carry a certain number of trains and a road a certain number of buses. The main point is how to load, and how and where to unload. One may think of a number of buses converging on the converted railway track and then on arriving at the city spreading out again into the streets. This would require quite a lot of signalling and expert driving of a great number of bus crews as against the one train crew, and greatly slow down the overall traffic.

I doubt very much that the speed and mass movement calculated by the road enthusiast would be possible even without taking into account the time factor of intermediate stops, i.e. the bottlenecks. The question of accident prevention is another point. Rail vehicles are automatically guided, road vehicles are not. Plans for the automatic steering of road vehicles go back more than 25 years and companies like General Motors are working on automatic roads. In an age of automation it now seems strange to try to abandon automatic traffic—automatic in a way—and introduce traffic completely dependent on human fallabilities, with its attendant dangers, amply illustrated by the increasing accident figures. The problem of distribution of the bottlenecks will remain. The private car has gained its preponderance because of its (sometimes only theoretical) independence of time, schedule, stops. One day we shall arrive at a compromise already envisaged by a leading German railwayman, Professor Baeseler, a former director of the German State Railways, who in 1951 wrote a phantasy about traffic in the year 2000. The road-railers here, and the pick-a-back traffic in the U.S.A. and on the Continent are experiments in the right direction, but just railways into roads? I would say "No."

Yours faithfully,

W. JACOBSOHN

77, Clarendon Road,
London, W.11

November 27

SIR, Referring to the letter contributed by Mr. A. W. T. Daniel in your issue of November 24, I note that he, like so many others, also falls for the supposed manpower economy of the railways.

He drew a somewhat irrelevant comparison between the staff-to-vehicle ratios of British Railways and the two road services of the B.T.C. The vehicle numbers are not comparable being, in the one case, self-propelled and in the other case not so. The explanation of why B.R. retains such a vast number of freight wagons of all descriptions is that on average each wagon apparently, according to the British Transport Commission Report, 1960, only starts on a loaded journey once a fortnight, when it conveys 7·82 tons for 70·24 miles at 4·22 m.p.h., and that is its fortnight's work.

Mr. Daniel referred to the peak passenger capacity of a single railway track. We now, at last, have an official claim on which to work. Mr. F. D. Y. Faulkner, Public Relations Officer of the Southern Region of B.R., claimed, in a letter to the *New Daily* of September 27, that one track on the Southern Region passes 31,500 passengers in the heaviest morning hour. This, one must assume, is the peak railway achievement in this field. Undoubtedly, it refers to one of the tracks between the Borough Market and London Bridge Station. The number of trains involved has been observed to be 27 and, from Mr. G. T. Moody's useful figures in your November 3 issue, it appears that the average number of seats per train may be taken as about 860, giving a total of 23,220 seats for 31,500 passengers, i.e., nearly half standing.

Mr. Daniel asked for an example of a single road-traffic lane which carries 30,000 passengers an hour. This is not easy to give, because one would have to find a stretch of urban clearway, comparable to a converted railway, in a place where this number of people wanted to travel and where the public transport was provided for the purpose. I know of nowhere where this combination occurs at the present time. The nearest to an answer I can give Mr. Daniel is to quote Mr. E. H. Holmes, Assistant Commissioner of Research, U.S. Bureau of Public Roads, in an address to American State Highway officials on December 1, 1960, when he said, "We do not design freeways to carry 2,000 vehicles per lane per hour, but many do carry that much and more. . . . Suppose we were to transport the 40,000 people in buses. Then, at 55 per bus, some 700 buses would be required, well within the capacity of a single freeway lane. And as evidence of realism in this figure, 20,000 to 25,000 persons per hour are regularly moved in buses in a single lane of the Lincoln Tunnel with ample room for many private cars as well."

No traffic engineer would deny that, say, 1,000 60-seater buses could pass along a single unimpeded traffic lane in an hour, providing 60,000 *seats* per hour, or that, if necessary, more could be accommodated. So, if we want more passenger capacity from our available routes—particularly *seated* passenger capacity—it means a change from rail tracks to road traffic lanes.

Yours faithfully,

M. J. DOUGLASS

Hallams Heath,
Shamley Green, Guildford

December 7

SIR, Mr. Munns hit the nail right on the head when he touched on the cost of the grand schemes put forward by the conversionists. Naturally, the state is to finance the whole affair, not the potential users.

I wonder if all road transport was Government-owned (as before 1953) would there be the same agitation for railway conversion?

Yours faithfully,

ARCHIBALD BIRT

34, Bute Street,
Gourock, Scotland

The Scrap Heap

Wagon train ?

Near the village of Silkstone (between Huddersfield and Barnsley) an interesting railway relic is still visible. It is the route of the Silkstone Wagonway laid down in 1809 and used until 1860. The line was about 3¼ miles long and two channel-shaped sections of rail are preserved in the York Railway Museum. The accompanying illustration shows the stone sleepers with their bolt holes. The sleepers are unusual in that they are set diagonally along the route.

Stone sleepers of the Silkstone Wagonway

Alas, poor Yorick !

The " Allhallows Flyer," local train from Allhallows to Gravesend in Kent, ran its last journey on Sunday, December 3. The event had not gone unnoticed by hundreds of train enthusiasts who had bought tickets for the last ride to Gravesend. Railway officials stated that it was one of the busiest trips the line had ever made.

Joke over

On the night that the " Railway Arms " public house was re-named " The Marlow Donkey," three local men decided to give a special welcome for the train of the same name—the 8.12 p.m. from Bourne End. Wearing cowboy clothes, they went to a crossing outside of Marlow and stopped the train by placing cartridges on the line. Brandishing plastic pistols at the driver, they snarled: " This is a stick-up." The joke was not appreciated by the British Transport Commission, and each of the three men was later fined 30s.

On record

To get some recorded sounds for the B.B.C. on the footplate of an express locomotive, Geoffrey Eley, a journalist and broadcaster, recently travelled with Driver Bill Hopkins, of Kings Cross, in the A-4 " Pacific " class No. 60022—the record-holding *Mallard*. That *Mallard* should have been the engine booked for this particular trip was a strange coincidence. In 1938, when the 126-m.p.h. record was set up by the late Driver Joe Duddington, of Doncaster, Geoffrey Eley—then a reporter on a national daily—was sent to Kings Cross to cover the story.

COPENHAGEN CENTRAL STATION

Decorations to mark the 50th anniversary of Copenhagen Central Station

Plus ça change

A reader writes: " The management of our English railways has got into a rut and there is little or no encouragement to look to the ' insiders' —managers or administrators—for redress; but, on the contrary, there are sufficient brains among the ' outsiders '—the rank and file of the railway world—to solve satisfactorily many of the present difficulties . . . . Rates of carriage cannot be increased, and it is therefore in the spending departments that we must look for the requisite redress, to make railways once more reasonably profitable." *From "The Financial Times," December* 12, 1901.

Smokeless zone

The Christmas stock of cigars and confectionery was stolen from a kiosk at Maryland Station, Stratford, British Railways, Eastern Region.

Thought for the day

British Railways must be the most progressive system in the world—it has four General Managers in orbit. *Anon.*

OVERSEAS RAILWAY AFFAIRS

FROM OUR CORRESPONDENTS

SWEDEN

Marshalling yard technique

Hallsberg, the largest marshalling yard on the Swedish State Railways, lying at the crossing point of the principal east-to-west line (Stockholm-Gothenburg) and principal north-to-south line (Örebrö-Malmö) is being provided with five sets of Thyssen-W type track retarders from the Brunswick works of Siemens & Halske A.G., in which the braking force generated by sets of rubber springs is controlled continuously by electro-hydraulic means. Hallsberg Yard hitherto has been dealing with about 2,000 wagons a day, but, with traffic increasing at the recent rate, it is visualised that the eventual total may rise to 4,000 wagons a day. Because of this, these new retarders are being provided for the moment with semi-automatic control, but arranged so that at a later date there may be added fully automatic control with electronic measurement of wagon weights and speed control through the use of radar.

SWITZERLAND

Federal Railways budget for 1962

The Federal Railway budget for 1962 forecasts a favourable balance of Sw. fr. 35·2 million and includes a further allocation of Sw. fr. 8 million for improvements to the railway system.

WEST GERMANY

Long welded rails

The German Federal Railway now claims to lead Western Europe in long welded rail mileage. Altogether 12,364 miles of line have welded rails. At the present rate of progress all main lines will have been welded by the end of 1965. Savings in maintenance costs on the long welded rails that have been installed so far, are estimated at £2 million a year.

IRAQ

Progress on Baghdad-Basra line

The Iraqi Railways Administration reports that some 50 per cent of the earthworks and 25 per cent of the culverts on the Baghdad-Basra standard-gauge railway have been completed. With the exception of about 40 km. where the line travels through marsh area, the bulk of this work is expected to be completed by early 1962. The embankments in the marsh area should be finished by the beginning of 1963.

Concrete sleeper factory

A factory capable of producing 1,000 concrete sleepers a day, supplied from Hungary under the terms of the Iraqi-Soviet Economic & Technical Co-operation Agreement of 1959, is scheduled to go into production in January, 1962.

TANGANYIKA

Common braking system

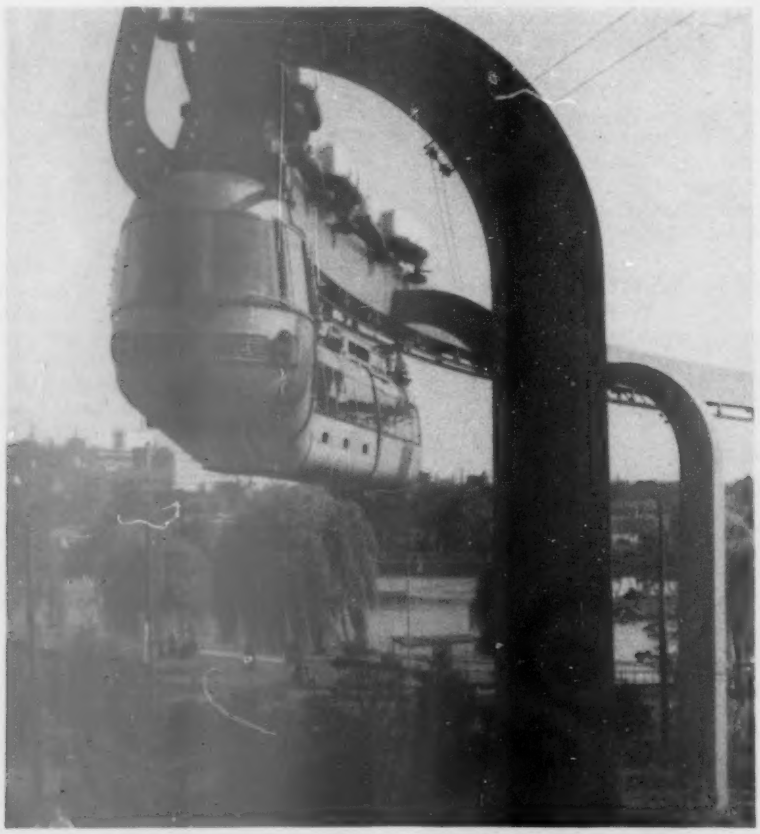
When the Mnyusi-Ruvu link is completed in the third quarter of 1962, the overall carrying capacity of the Tanganyika-Kenya-Uganda section of East African Railways & Harbours will be considerably increased by an interchange of wagons made possible between the Kenya-Uganda section and the Tanganyika Central line. This interchangeability will call for a common braking system. The expenditure of £275,000 has been authorised on the conversion of locomotives and vehicles on the Central line from vacuum to air-brakes. A further £50,000 is to be spent on the modernisation of the brakes on 157 locomotives on the Kenya-Uganda and Tanga sections of the railway.

FORMOSA

Railway fare and rate increases

There has been much public agitation in Formosa over threatened railway rate and fare increases which were to have

MONORAIL IN JAPAN



Monorail experimental car in operation in Veno Park, Tokyo

been brought into effect on July 1. The issue has been deferred, allegedly because of the sharp reaction to the issuing of N.T. $100 notes, and to the increase in power rates. A recent study has shown that passenger fares and freight rates should be raised by about 40 per cent if the Railway Administration is to cover its annual deficit and earn 6 per cent on its operations.

CAMBODIA

Passenger coaches from Germany

The Director of the Cambodian State Railways recently made a 10-day visit to the German Federal Republic in connection with a German Government contribution of DM.800,000 for the purchase of railway carriages. These carriages will be used on the line now under construction to link Phnom Penh and the port of Sihanoukville.

NEW ZEALAND

Bogie wagons from Japan

The New Zealand Government has ordered 14 Japanese-built railway bogie wagons for delivery in June and July next year. They have been purchased from the Kinki Rolling-Stock Company of Tokio, and are the first exports of rolling-stock from Japan to New Zealand. Commenting on the purchase, the General Manager of the N.Z.G.R., Mr. A. T. Gandell, said that the bogies were for use with postal and steam-heating vans being constructed at the Otahuhu Railway Workshops. The bogie wagons had been ordered from Japan because the large quantity of other work on hand will not allow their immediate manufacture in New Zealand.

In Brief

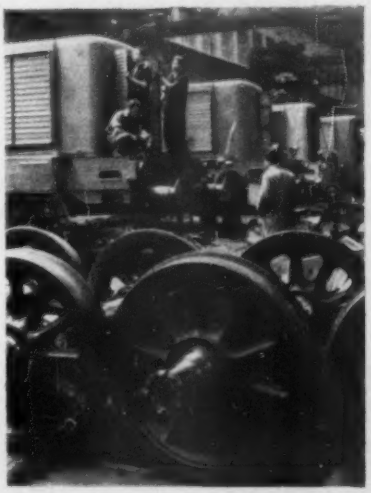
Denmark. A report published by the Traffic Committee envisages the expenditure of Kr. 4,800 million (£24.7 million) on railways over the next 20 years, including Kr.1,100 million on the Copenhagen suburban railway.

Formosa. Railway freight traffic on the main western line is some 5·6 per cent above 1960 levels, but passenger traffic which declined by 2·6 per cent in 1960 continues to lag.

Hungary. Between June and September this year 40 diesel locomotives were manufactured in Hungary.

Poland. Production is planned of 102 passenger coaches, 51 three-car electric sets, 10 diesel engines, 49 electric locomotives, 143 other locomotives, and 9,220 freight wagons for the Polish State Railways.

LOCOMOTIVE PRODUCTION IN HUNGARY



Assembly of 600-h.p. diesel-electric engines at Ganz-Mávag Locomotive Works, Budapest

PUBLICATIONS RECEIVED

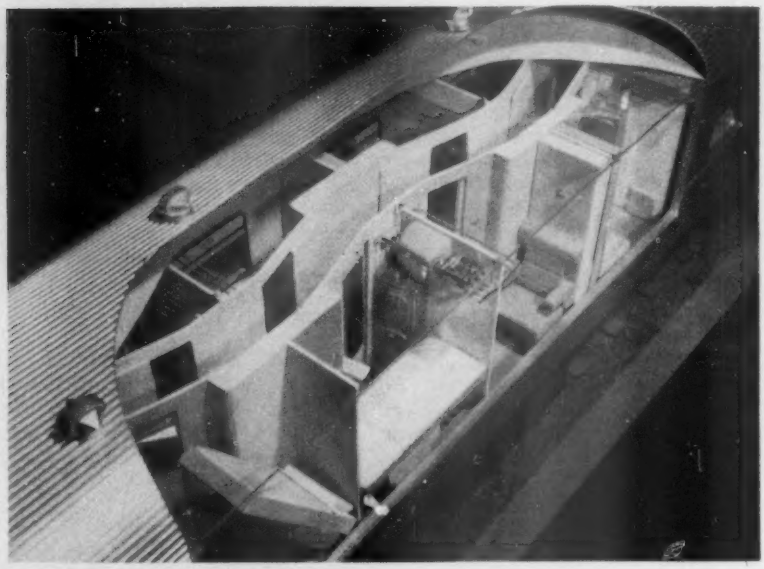
Safety Rules for the Installation and Maintenance of Electric Supply and Communication Lines. National Bureau of Standards Handbook 81 issued November 1, 1961, 197 pages, available from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C., price $1.75c. (Foreign remittances must be in U.S. exchange and should include an additional one-fourth of the publication price to cover postage.) This handbook is a revision of Part 2 of the National Electric Safety Code, and supersedes N.B.S. Handbook 32. It also contains revisions of the definitions and grounding rules used with the Code, last published in N.B.S. Handbook 30 in 1949. Parts 1, 3, 4, and 5 of Handbook 30 remain in effect. The handbook contains a revised definition of voltage. In many of the tables it allows voltage to be based on voltage-to-ground instead of voltage between phases. This will permit higher voltage on existing works and still meet clearance requirements.

Using ultrasonics. By R. Hamilton. Issued by the Information Division, Department of Scientific & Industrial Research, State House, High Holborn, London, W.C.1. Copies of this series of booklets are available, free, and post free, from the library. The booklet reviews the newer applications of the technique of making use of sound waves generated at extremely high frequencies, by definition above 16 kilocycles, called ultrasonics. In engineering, ultrasonics has been applied to production as well as to testing. It can overcome oxidation in soldering and welding. It can perform both grinding and drilling, using an abrasive slurry. In this role, it can cut hard materials such as tungsten carbide or uranium. It can slice germanium and silicon for use as wafers in transistors. It is widely used for cleaning, especially for small and intricate mechanisms. For test purposes its uses are well known.

Memoir on the late Brigadier W. G. Tyrrell. Reprinted from the *Royal Engineers Journal, December*, 1961, this booklet outlines the career of the late Brigadier W. G. Tyrrell, a former Commandant of Longmoor Camp, Royal Engineers, whose death was recorded in the personal pages of our August 25 issue.

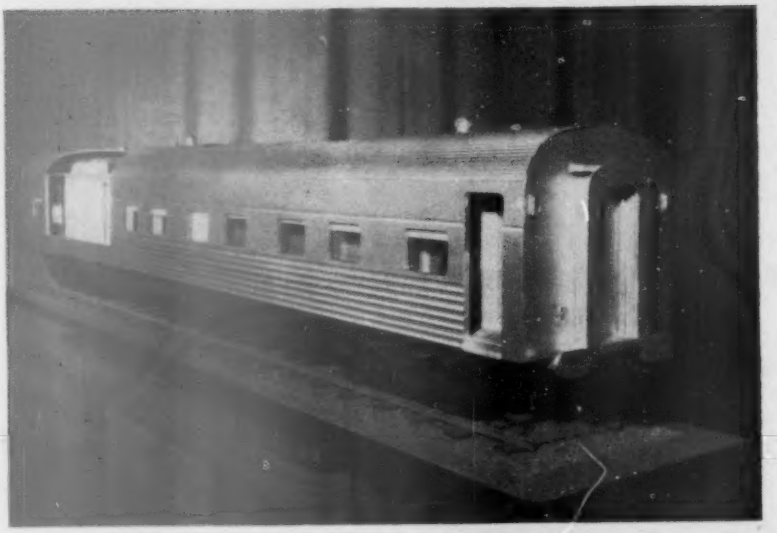
Henschel Locomotive Engineer's Manual. 1960 Edition. Published by Henschel-Werke GmbH, Kassel, Germany. Rights are reserved, especially that of translation by the company. English translation by F. E. Hart, Berlin. Manuscript and editing is by Ober-Ing Dr. Ing Kurt Ewald. 6½ in. x 4 in., plastic covers. Fully illustrated with diagrams. This publication forms a guide to the complete science of locomotive engineering in all its forms. Henschel has practical experience of every form of propulsion used on rails and a compilation of the experience obtained forms the subject matter. Illustrations in small sizes are given in the text, but those in larger sizes, involving folding, have been placed, with numerous diagrams, in a separate " folding leaves " section of the book. This novel form of make-up has added to the strength of the binding and produced a book which can be carried in the pocket. The freedom to publish diagrams of large size has been fully used and the book gives a comprehensive collection of calculations, graphical and otherwise, for the guidance of the engineer on all phases of locomotive work.

Calendars. We have received calendars from the following: Brown Boveri & Co. Ltd.; Henschel-Werke G.m.b.H.; Harrison & Sons Ltd.; Hawker Siddeley Industries Limited; The B.S.A. Tools Group; Westinghouse Brake & Signal Co. Ltd.; East African Railways & Harbours Administration, and the Malayan Railway Administration.

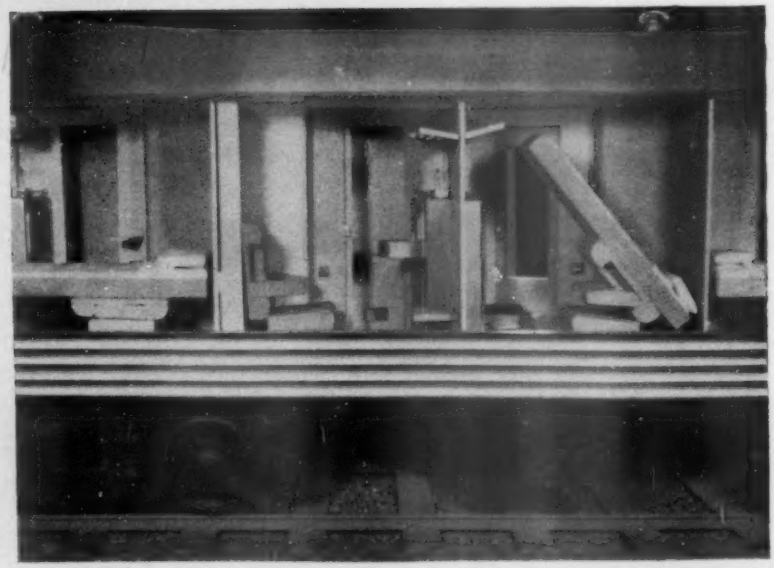


Cut-away section of model of roomette sleeping coach showing zig-zag corridor which allows wash-basin-toilet unit to be fitted into corner of cabin

STAINLESS-STEEL SLEEPING COACHES FOR THE SYDNEY-MELBOURNE STANDARD-GAUGE SERVICE



Model of stainless-steel twinette coach to be used on the overnight trains between Sydney and Melbourne



Model of roomette cabin showing how beds fold into position to convert cabin from day use to sleeper. The centre cabins show the wash-basins folded down for use

OPERATION OF SYDNEY-MELBOURNE standard-gauge service

New air-conditioned sleeping-car trains: first coded track-circuits in Australia to control fast passenger trains

For the Sydney-Melbourne standard-gauge service two new air-conditioned 10-car sleeping-car sets are being built. Five of the cars in each will be of the roomette, and five of the twinette type, one of the five-car sets being of *de luxe* standard. The two sets are being constructed for joint-State ownership. They will run in the night limited sleeping trains. The 34 vehicles required, including spares, are being built by the Commonwealth Engineering Company, N.S.W.

Roomette cars

The roomette cars have 28 single-berth compartments arranged longitudinally to the cars. They also have hot-and-cold showers at one end of each car. The twinette has 20 berths in 10 two-berth compartments and each compartment is adjoined by a shower and toilet. The *de luxe* twinette has 18 berths and in its centre a bed-sitting room with armchairs. At one end are two family units each consisting of two twinette compartments inter-connected. At the other end are four twinette compartments. These stainless-steel cars will be very similar to those on the Sydney-Brisbane Limited, already described in detail in these pages.

Each of the 10-sleeping-car sets will be incorporated in a 14-coach train, including a dining car, a club car, a brake van and a power car for supplying current for the air-conditioning, heating, lighting throughout the train, and for cooking. The dining car will serve 48 passengers at one sitting and will also provide light refreshments. The kitchen fittings are all of stainless steel. Light refreshments will also be available in the club car. This car is divided into three compartments by armour-plate glass bulkheads.

One compartment will be a lounge seating 40 passengers and fitted with a writing and also small portable tables.

Stainless-steel construction

Spot welding, based on the latest overseas structural practices, will be used in the construction of the new carriages which will be sheathed with the first Australian-rolled stainless steel manufactured for railway carriages.

The Unanderra (N.S.W. South Coast) mill of the Commonwealth Steel Co., is manufacturing 187 tons of stainless steel for this purpose. It will be delivered in coils, and the giant strips, fluted for strength and rigidity, will give the carriages a characteristic appearance. A total weight saving of 84 tons per train (equal to two sleeping carriages) will be made by the use of this steel and no painting will be required.

A 2-in. thick lining of fibre-glass insulation will keep noise down to a very low level, and, at the same time, help to maintain the comfortable temperatures provided by the air-conditioning plant. The trains will have 20 miles of electric cable in their wiring systems.

Stock for daily expresses

For the night-sitting trains, Victorian Government Railways 5-ft. 3-in. gauge air-conditioned stock at present incorporated in the *Spirit of Progress* and *Daylight* expresses, converted to 4-ft. 8½-in. gauge will be used. They will be equipped with electric floor-heating, the heating elements operating in conjunction with the air-conditioning system. The heat will come up through the carpeted floor and will be evenly distributed throughout each carriage at a uniform temperature.

The New South Wales Railways is to supply the stock for the *Daylight* identical with that on the New South Wales side of the border at present; the trains will run through to Melbourne instead of terminating at Albury. With two night-sleeping and two night-sitting trains and the *Daylight* there will be a service of three through standard-gauge trains each way daily.

Victorian stock modifications

As well as the reduction of the bogies from 5-ft. 3-in. to 4-ft. 8½-in. gauge, existing Victorian sitting carriages will be altered for standard-gauge service. The air-conditioning equipment and lighting systems will be converted to 415-V. a.c. supply to conform with New South Wales practice. Current will be generated in a special power-van supplying it to all electrical appliances on the train, instead of from generators under each carriage as now fitted to Victorian rolling stock.

Two buffet cars, *Mitta Mitta* and *Wimmera*, formerly on the *Albury Express* will also be converted to provide an all-night refreshment service.

Melbourne-Canberra through carriages

Certain Victorian air-conditioned compartment sitting-carriages will be converted to composite sleeping and sitting cars for through Canberra passengers. One carriage will be attached to each of the Melbourne-Sydney night-sitting trains and will be detached at Goulburn. From there it will be attached to the regular Goulburn-Canberra service.

To supplement the converted stock, two additional twinette sleeping carriages are to be built to provide sleeping accommodation on the night-sitting train for those who prefer the arrival time of this train, or fail to secure accommodation on the sleeping train. These trains and the present "Overland," between Melbourne and Adelaide, will give Victorian passengers interstate travel considered equal to standards anywhere in the world.

In Victoria, all trains will be hauled by "S" class diesel-electric locomotives, and in N.S.W. "44" class diesel-electrics will take over.

Signalling

In our issue of September 15, the c.t.c. system of the Melbourne-Albury standard-gauge line now under construction was briefly outlined. Subsequently the following details have come to hand.

The system covering the 195 miles of single line between West Footscray, in the Melbourne suburban area, and Wodonga, with its 15 crossing loops, is designed to control passenger trains at up to 80 m.p.h. and goods trains at 60 m.p.h. Signals are of the searchlight colour-light type. Where the loops are eight miles or less apart there are no automatic intermediate signals, but the longer sections will be divided to maintain a uniform headway between following trains.

Australian design

The contract for the power signalling was awarded to McKenzie & Holland (Aust.) Pty. Ltd., of Spotswood, Victoria. This company will design and install "Westronic" c.t.c. equipment supplied by the Westinghouse Brake & Signal Co. Ltd., London.

The system of coded track circuits has not previously been used in Australia. Signal control information will be transmitted through the rails by varying the rate of coding. Energy, fed at 120 impulses per min., causes a signal to show a warning aspect, whereas 180 impulses gives a clear indication. The coded energy, together with a decoding device at the relay end, enable longer track circuits to be used. They will be up to

two miles in length on the new line.

Main-line points at crossing loops will be operated by dual control mechanisms, and sidings points at the ends of crossing loops will be worked by hand when released by electric locks. Normally d.c. will be used for signalling power, but where the new line is alongside 1,500-V. d.c. electrified suburban lines, a.c. will power the signalling. Single-phase 50-cycle power at 440 V. will charge storage batteries for the d.c. signalling, but for the 110-V. a.c. installations it will be distributed at 2,200 V. A new line of poles will carry the 440-V. current and the c.t.c. lines, signal controls and communications lines. Train crews can communicate with control by line-side telephones.

Pushbutton control

In the control room at Spencer Street, Melbourne, a track diagram surrounding the control desk, gives indications of all signals and points and the positions of all trains. By pressing two buttons the controller can select the desired field location. A glass indicator above the diagram bearing the number of the location will then become illuminated to show that conditions have been established for the following control transmission.

The top row of buttons controls points, either the normal or reverse button being pressed to send a control. The lower-row buttons control the signals, and auxiliary buttons give low-speed indications, line sectionalising or switching, carrier transfer, acknowledging, and other auxiliary communications. The control system works at carrier frequency and continually scans the controls and indications taking about 2 sec. to cover the line. The cost of the whole installation is about £1 million, in addition to £500,000 for alterations to broad-gauge signalling and £200,000 for the protection of level crossings.

LIGHTING FOR WARNING BOARDS in the Western Region

Portable propane-gas lighting introduced to provide better illumination to obviate provision of hand-signalmen

TO PROVIDE better illumination of arrow warning boards and indicators, and to obviate the necessity for hand-signalmen at such places, the Western Region of British Railways has adopted a long-burning propane-gas burner in the lamp case.

Investigations into the possibility of better lighting in this connection have been carried out for some time past, and the matter has become more urgent as colour-light signalling has extended. The brightness of the colour lights has made it essential that a corresponding increase in the lighting of the boards and indicators be achieved.

Good visibility in dark

Trials were carried out at Reading, and the most efficient and satisfactory method proved to be with propane gas fed from portable cylinders or bottles. This was clearly visible in the dark at a distance of 1½ miles, and even in bright sunshine could be seen easily from a ½-mile distance. Subsequently, line-side tests over several months have shown that yellow lights could easily be detected at a distance of ¾ mile.

The ordinary board and lamp cases are used, but instead of oil lamps, small gas burners with ordinary mantles are fitted in the lamp cases. They are fed from two gas-cylinders successively, each with a capacity of 28 lb., and holding the propane gas under a pressure of 100 lb. per sq. in. The gas is fed from cylinders to the burners through a reducing valve, reducing the pressure to 1 to 2 lb. per sq. in., and also through an automatic changeover valve. This low pressure is sufficient to prevent the lamps being blown out even in exposed places; the only parts of the apparatus under high gas pressure are the cylinders and the short length of tube from them to the reducing valve.

Method of feed

The feed takes place from one cylinder at a time; when the first one becomes empty—after feeding the three burners for over a week—the flow of gas is automatically admitted from the second cylinder by the changeover valve. To enable the first cylinder to be replaced an indicator incorporated in the valve shows when this is necessary. In this way the two cylinders together provide lighting for about 17 days and the lights burn continuously and do not go out at the changeover.

A test arrow warning board with this type of lighting has been in service in the London area for some months. The only improvements the test has suggested are the fitting of hoods over the yellow lights to reduce the tendency to mingle with the stencil light and the introduction of special lenses to concentrate the beams.

Successful tests

The initial tests have proved so successful that a further 30 arrow boards are to be adapted; the major test will take place when there is dense fog. The improved equipment has already proved so successful that hand-signalmen are unlikely to be required at these boards in future. If this surmise is finally confirmed the equipment will be redesigned to prevent unauthorised interference with the gas supply.

We are indebted to Mr. M. G. R. Smith, Chief Civil Engineer, British Railways, Western Region, for the information contained in this article.

CONSTRUCTION WORK ON INDIAN RAILWAYS

Work on Delhi avoiding line

Work has begun on the construction of an important Delhi avoiding line from Sahibabad to Tughlakabad involving a new bridge over the Yamuna (Jumna) River. Earthwork is in hand and the contract for the construction of the bridge substructure has been awarded. Tenders for the fabrication, supply and erection of the superstructure are at present being considered.

Hindumalkote extension sanctioned

The Railway Board has sanctioned the construction of a new 5-ft. 6-in. gauge extension of the Northern Railway's Bhatinda-Hindumalkote branch to the market town of Sriganganagar, 17 miles, near the Pakistan border.

Dharamnagar extension

Another 20-mile extension recently sanctioned will connect Dharamnagar (Tripura) with Kalkalighat (Assam). Both these lines will be of metre gauge and constructed by the North-East Frontier Railway.

AUTOMATIC HUMP YARD at Montreal

The largest and one of the most up-to-date shunting yards in the world opened on September 13

REPLACING three other marshalling yards in the Montreal terminal area, a hump yard at Montreal was formally opened on September 13. In it 7,000 wagons can be sorted daily, and it has a standing capacity of 10,600 wagons within its 800-acre area. There are two sections, the main yard with a 4,330-wagon capacity and 84 sorting roads, and the local yard with 1,700-wagon capacity and 40 sorting tracks. Between them they have 160 miles of track, 644 sets of points and crossings, and 10 miles of highway roads. So efficient is the yard that on an average only about four hours elapse between a wagon entering and leaving the yard again.

The main yard has two hump roads and the local yard one. As each train enters the main receiving yard it passes television cameras enabling a clerk in the yard office to read into a recorder engine and wagon initials and numbers. The recorder disc is then checked against a previously-received composition and destination list, and the track numbers are assigned accordingly. The completed list of the train next goes to the machine room where a card is punched for each wagon. Meanwhile, the hump switch list is reproduced on teleprinters in the hump foreman's office and the hump yardmaster's tower. One teleprinter at the crest of the two humps automatically produces car labels from the switch lists sent from the general yard office.

Aerial view of Montreal hump yard

These are features common to the most modern hump yards everywhere, but at Montreal there are others that are new. For instance, an automatic oil-injection system is installed. Wagon inspectors in the receiving yard leave the axlebox lids of journals requiring lubrication open, but close those where none is required. As the train approaches the hump with some boxes open and others closed an electric eye of a photo-electric cell system spots those with open lids and causes an oiler to squirt oil into the appropriate axleboxes.

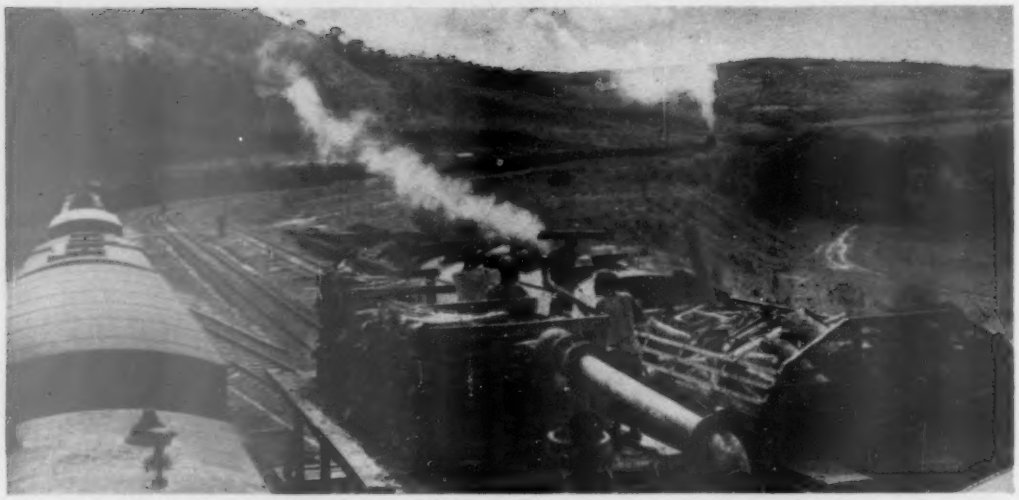
Two switching panels

In the main hump yard there are two switching panels, one for each hump so that two trains can be dealt with, simultaneously. The sorting is effected by the foreman pressing the appropriate buttons on the panel, and the retardation of each wagon is automatic. All the latest radio and other communications are installed, there being no fewer than 277 talk-back speakers throughout the yard.

The first major work in connection with the yard to be completed was the diesel shop, accommodating 40 units at a time. There are also wagon-cleaning and wagon-repair shops. In fact Montreal is a larger edition of Moncton yard described in our issue of February 24, 1961.

CANADIAN RAILWAYS DURING 1960

Common carrier railways in Canada operated a total of 44,029 miles of first main track at the close of 1960, a decline of 180 miles from the preceding year, but an increase of 377 miles over the 43,652 miles recorded in 1956. During the five-year period, second main track-mileage declined 233 miles to 2,243 and industrial track was reduced 1,136 miles to 1,248. Yard track and sidings rose 310 miles to 11,628 between 1956 and 1960, while the total mileage of all tracks declined 637 miles to 59,193. Rail freight wagons in service during 1960 numbered 191,553 down from 194,513 a year earlier and 191,974 in 1956. The average capacity of freight wagons increased over the five years, rising to 51·4 tons in 1960 from 51·1 in 1959 and 49·6 in 1956. Passenger vehicles in service have declined steadily during the five-year period, dropping to 5,119 units in 1960 in contrast to 5,456 in 1959 and 6,220 in 1956. Steam locomotives in service in Canada at the close of 1960 numbered 403 units, down from 1,514 in 1959 and 2,849 in 1956. Diesel units, on the other hand, totalled 3,308 in 1960, up from 3,155 a year earlier and 1,895 in 1956.



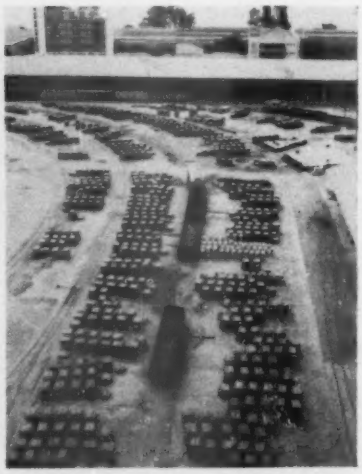
Taking on wood at Lepi

BENGUELA RAILWAY

The Benguela Railway which runs from the port of Lobito on the Atlantic coast of Angola to Dilo on the Congo frontier, a distance of 838 miles, has to face many difficult operating problems. Many of these are encountered on the coastal escarpment where the line climbs through barren country to 3,000 ft. in 37 miles followed by a sharp drop of 1,300 ft. in 16 miles. After this it starts its long ascent to the Central Plateau reaching a height of 6,082 ft. near Vila Verde, 216 miles from the coast.

To meet these conditions the railway makes extensive use of Beyer-Garratt articulated locomotives with 4-8-2+2-8-4 wheel arrangement, some of which are illustrated on this page. These locomotives are capable of hauling trains of 400-500 metric tons over the steepest section of the line, between Benguela and Cubal where the gradient reaches 2.5 per cent.

Because of the lack of coal in Angola the Company laid down soft-wood plantations of eucalyptus now containing about 85 million trees. These supply the Railway's wood-fuel requirements of over 500,000 metric tons a year.



Copper ingots at Lobito mineral yard

Taking on water at Lepi

Passenger train at Lepi Station

CLEARANCES FOR OUT-OF-GAUGE LOADS in America

Tunnels lowered and widened and 7½ miles of track lowered 6 in. to 24 in. under traffic

To CARRY higher and wider transcontinental and other loads, the Chicago, Milwaukee, St. Paul & Pacific Railroad administration has been carrying out a great deal of work on its 700-mile main North West Coast line. This line crosses five mountain ranges, including the Rockies and Cascades, in the course of the work the floor levels of 31 tunnels of various lengths have had to be lowered and tunnel widths increased. As this is an electrified line it has been necessary to raise the overhead wires in 36 tunnels.

No interference with traffic

Work began on the first of the tunnels in May of this year and was expected to be completed throughout the 31-36 tunnels by October 1, though drainage works and final ballasting were to take another month. Despite the difficulties involved in lowering the track, this has been carried out without interfering with traffic, and in a limit of six months.

Altogether 7·54 miles of track have been lowered by at least 6 in. and in many places by as much as 2 ft. Of this total length, 4·55 miles are actually inside the 31 tunnels, the remaining 2·99 miles being in tunnel approaches.

Two methods of track lowering have been adopted. One involves undercutting the track, largely in rock, the excavated material being disposed of by a system of conveyor belts and dump trucks specially adapted for the purpose by the engineers of the railway.

Track removal

The second method, demanding even closer co-ordination with train movements, involves the removal of short sections of track, followed by the quick breaking up of the rock floor by blasting and ripping. The loosened material is then pushed out of the tunnels by bulldozers, and the track rapidly replaced in time for the passage of the next train.

In all there are 46 tunnels on this trunk line between Ringling, Montana, and Whittier in the State of Washington. The total cost invested in the lowering and other works in the 36 tunnels, and in the track-lowering under overbridges in Minneapolis and La Crosse is stated to be over £285,000.

The results achieved are considered to be well worth such a sum. They include a material increase in the flow of traffic of this transcontinental route by reason of a great variety of outsize loads.

Among them 1962-model motor cars in large numbers for the Western States carried in three-tier wagons or vans, the completion of the work so early enabling this traffic to flow freely in ample time for the marketing of these cars. This form of three-tier movement is now gaining rapidly in favour among car manufacturers. More massive industrial equipment, such as large transformers, turbines, boilers, generators, and other bulky loads, including larger prefabricated houses, can now use this route for the first time. The line's ability to carry unusual military traffic requiring abnormal clearances is also most valuable.

Announcing this achievement, Mr. W. J. Quinn, President of the Chicago, Milwaukee, St. Paul & Pacific Railroad, praised the engineers who planned and supervised this delicate work, and designed some of the equipment, for accomplishing their task under traffic in record time.

COVERED VAN PRODUCTION IN MEXICO

The 10,000th covered van built by Constructora Nacional de Carros de Ferrocarriles came off the assembly line at Cuidad Sahagun in July this year. As well as supplying the entire home market with covered vans, this company has obtained a contract to supply the Panama Canal Zone authorities with 15 vans and is tendering for the supply of a large number to the New Zealand Government Railways.

MOTIVE POWER IN NORTH AMERICA

Four U25B locomotives of 2,500 h.p. built by the General Electric Company and awaiting delivery to the Union Pacific Railroad

MOTIVE POWER DEPOT AT LIVINGSTONE in Northern Rhodesia

Heavy traffic increase necessitated a considerable improvement in motive power handling facilities

RHODESIA Railways has built a motive power depot at Livingstone, in Southern Rhodesia. This depot is situated about 280 miles from Bulawayo and 290 miles from Lusaka, and trains have to be marshalled there as the gradients to the north make a reduction in load necessary.

In 1951, additional tracks were provided and repair pits under cover for two locomotives were built. This eased the position temporarily but traffic continued to increase and by 1956 it was evident that considerable expansion was necessary.

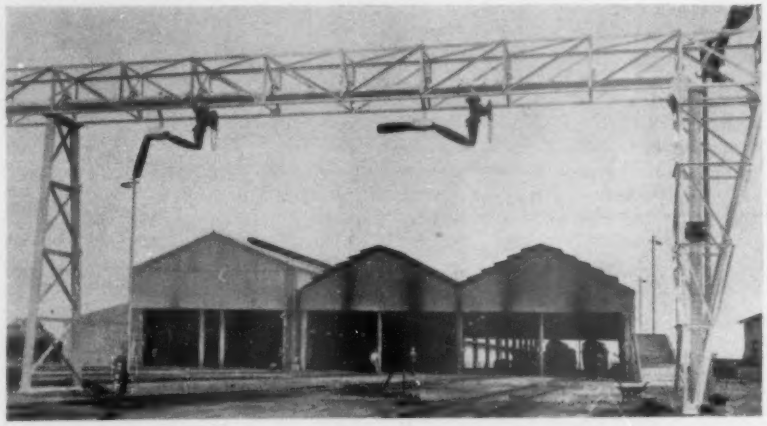
Beyer Garratt locomotives

The only straight-coupled engines, for which the old depot was designed, and now based on Livingstone, are used for yard shunting The main-line locomotives are all of the "15th" and "20th" class articulated Beyer Garratt type. At present, 32 of these operate from Livingstone and this number may increase as traffic builds up. A new depot was therefore essential.

The running and repair sheds are of reinforced-concrete portal-frame construction, with prestressed-concrete purlins spanning 30 ft. and carrying corrugated-asbestos roofing.

The running shed consists of two bays of 42 ft. span each and is 300 ft. long. Repair pits run its full length and 12 locomotives can be housed at one time.

The repair shed adjoins the running shed and is 48 ft. span and 300 ft. long, with repair pits and wheel and bogie-drop pits. Six locomotives can be accommodated. A 7½-ton overhead electric travelling crane is provided for heavy lifts. Ventilation is by side louvres and a continuous ridge ventilator.



General view of the sheds through water gantry

The operation of the shed is straight forward. Incoming engines proceed to a covered examination pit outside the shed, where the crew books off and the shedman takes over. The engine then moves on to the coaling plant, where the bunker is filled, and then to the de-ashing plant. This consists of a water-filled concrete hopper below ground level, where the fire is cleaned and water taken on. The ash is disposed of by an overhead crane with a grab, which loads the ash into trucks for disposal. The engine then proceeds to the far end of the running shed, where it reverses into either the running or repair shed as required. A triangle is provided for reversing the engine, either before or after entering the shed.

After servicing, it moves out of the shed to the preparation area, when the fire is again cleaned and water taken on if necessary. It is then ready for its next journey.

The coaling plant is of 500 tons capacity in overhead bunkers.

The interior of the repair shed

Associated buildings

A Locomotive Foreman's office has been provided and contains ablution and locker facilities for running and shed staff, as well as the usual clerical offices.

The main lines each side of Livingstone are under centralised train control. Colour-light yard signalling interlocked with c.t.c., and controlled from a signal cabin, is also provided.

The overall cost of the new depot and the yard extensions was just over £600,000.

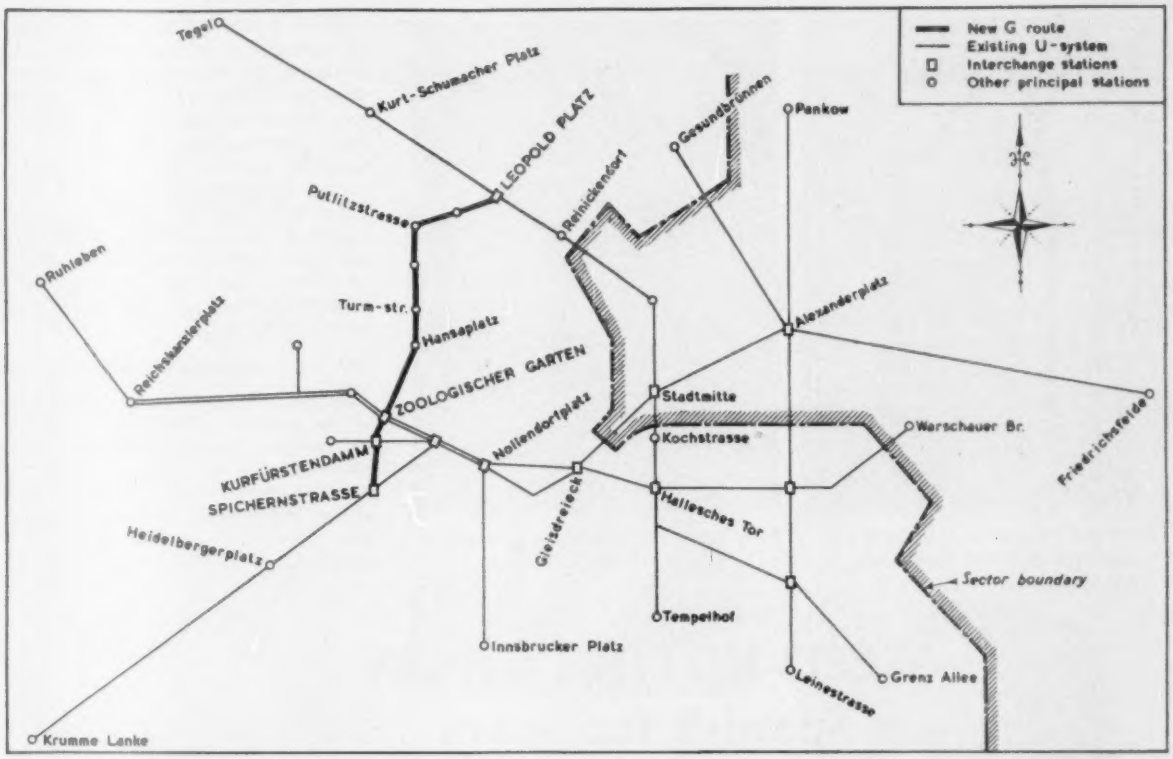


Diagram showing the extent of the Berlin underground system

DEVELOPMENT OF THE UNDERGROUND system in Berlin

North-south extension in Western Sector connecting Leopoldplatz and Spichernstrasse

AN EXTENSION of the Berlin Underground opened recently gives a north-south connection between Leopoldplatz, on the Tegel north-west line, and Spichernstrasse, on the Krumme Lanke line to the south-west, and provides interchange connections at two intermediate stations, Zoologischer Garten and Kurfürstendamm.

This 4·1-mile double-track line is operated by a shuttle service of trains at 5-min. intervals in each direction from 5.50 a.m. to 7.35 p.m and at 10 min. intervals thereafter until 11.25 p.m. The end-to-end journey takes 11 min., inclusive of seven intermediate stops, or a commercial speed of 22 m.p.h.

The new line brings the total length of the Berlin Underground to 55·5 miles and the number of stations to 108, of which 40 miles and 75 stations are in the Western Sector. Known as the "G" line, it runs under the Berlin-Spandau canal, the Landwehr canal and the River Spree, and involved the excavation of 1,960,000 cu. yd. of earth and the use of 350,000 cu. yd. of concrete and 12,800 tons of constructional steelwork. New 49-ft. cars of the modern "D" type with a top speed of 43 m.p.h. and similar to those already in use on the Tegel line, have been built for the "G" line. In rush-hours, the normal six-car set is increased to eight cars.

Automatic block

Signalling throughout is automatic block with magnetic a.t.c. installed by Siemens & Halske A.G. in 17 block sections for one track and 18 for the other. In conjunction with the rapid train acceleration and retardation, the signalling system permits a maximum of one train every 90 sec. The equipment includes train describers, time recorders, and special "train-ready-to-start" blinking signals at the end of each platform operated by the platform inspector.

Because of the construction of the line and the operation by shuttle trains, there are two special features. As the line runs under two canals and one river, and much of it is through ground easily waterlogged, steel floodgates have been erected at six points in the tunnels to limit any water break-through the tunnel on this stretch being only about 30 ft. below surface level. These gates operate in conjunction with the signals and a.t.c. Closing of a pair of gates, or indeed any position of the gates other than fully open, puts the signals at each side to danger and stops any train through the a.t.c. if the driver himself takes no action.

Terminal cross-overs

The second point is that at the two terminal stations the signals and points permitting the trains to cross over from the arrival platform to the departure

Reversing cross-overs at Leopoldplatz, station platforms in background

Steel water-tight flood-gates in Spandau canal section

platform operate automatically. When all passengers at Leopoldplatz have detrained, the train runs forward into a dead-end section of tunnel containing two extra tracks apart from the platform-track continuations. As soon as the train has passed over the first trailing points, as denoted by an axle counter, the points are set and the route signalled for the reverse cross-over to the departure platform by one of three possible routes, as long as the departure platform is unoccupied. Signals and points are reset automatically as each is cleared.

Extension planned

At Spichernstrasse, as the line is soon to be extended southward to Steglitz, the cross-overs are arranged before the platforms instead of after them. By these means, at both terminals trains always depart from the same platform. Two extra tracks enables trains to be stored when required in slack periods.

WEED-KILLING TRAIN on Spanish Railways

Automatic control of distribution of weed-killing solution from locomotive cab

A WEED-KILLING train comprising a diesel-locomotive, a store-truck, four tank-cars with a capacity of 26 cu. metre containing a concentrated solution of sodium chlorate; another tank-car containing a concentrated solution of "Weedex," a workshop-car, a coach completely equipped with dining, living and sleeping accommodation for the train's crew, three 36-cu. metre tank-cars to carry water, and a brakevan has been introduced on Spanish Railways.

The crew consists of an employee travelling in the locomotive who is in charge of the whole sprinkling operation, a mechanical engineer and an electrician.

The locomotive and the workshop-car are linked by means of microphones and loud-speakers.

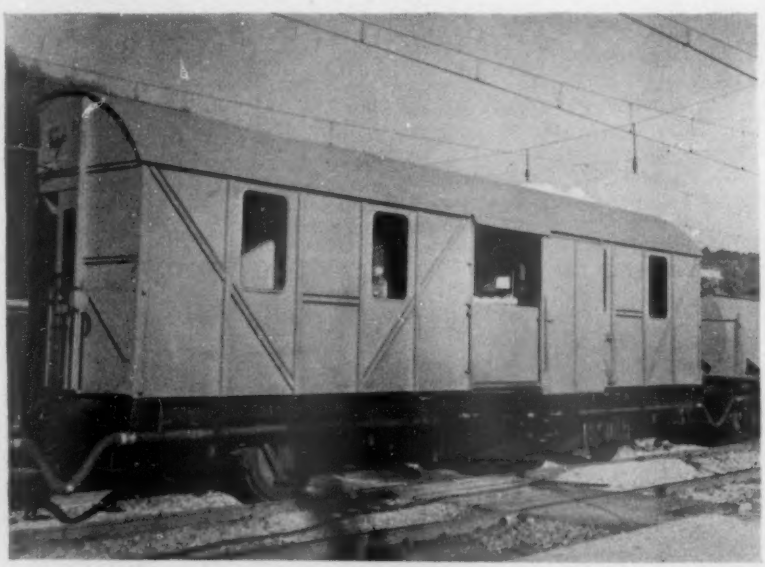
Automatic preparation of solution

The preparation of the sprinkling-solution is done automatically inside the workshop-car. While the sprinkling is in process 90 parts of water are mixed with eight of the solution of chlorate and two of "Weedex."

Sprinkling can be carried out at speeds from 15 to 50 k.p.h. Usually it is done at 40 k.p.h. and is electrically regulated from the locomotive by an automatic control panel controlling the 12 jets. The side jets can be easily arranged in the best position to allow for a sprinkled area of 7·50 metres to be covered.

The weed-killing solutions are stored in nine regional reservoirs conveniently situated throughout the Spanish National Railway System, and these are made up of five tanks of 27 cu. metres each.

The train's tanks are of the same capacity as the regional reservoirs and from 2,000 to 2,500 km. of track can be sprayed, depending on the density of the growth of weeds of the area to be covered.



Workshop-car on weed-killing train on Spanish Railways

PERSONAL

British Railways

MR. S. B. LOVEGROVE, Assistant Line Traffic Officer (Operating) Crewe, British Railways, London Midland Region, who, as recorded in our September 8 issue, has been appointed Movement Superintendent to the Line Traffic Manager, Crewe, began his railway career at Stratford in 1920 as a junior clerk in the office of the Locomotive Accountant of the former Great Eastern Railway. He was selected as a traffic apprentice by the London & North Eastern Railway in 1927, and, after a period of training, was appointed Assistant Yardmaster at Ferme Park. A year later, he became Station-

Mr. S. B. Lovegrove

master at Dunford Bridge, and, in 1933, was appointed Deputy Chief Controller, District Superintendent's Office, Manchester. Between 1937 and 1944, Mr. Lovegrove was successively Yardmaster at Sheffield and at Grimsby Docks, Supernumerary Assistant to the Superintendent, Eastern Section and to the Trains Assistant, District Superintendent's Office, Cambridge. In 1944, he became Acting Assistant District Superintendent, Leeds, and was officially appointed to this position in January, 1945. In the same year he became Acting Assistant District Superintendent, Godley (Manchester), and returned to his former position at Leeds in 1946. He became Assistant District Superintendent, Manchester, in 1947, and a year later was appointed Assistant District Superintendent, Stratford, Eastern Region. He was appointed District Operating Superintendent, Birmingham (Western) in 1951, District Operating Superintendent, Liverpool Lime Street in 1954 and Assistant Line Traffic Officer (Operating) Crewe in 1958. Mr. Lovegrove was awarded the Brunel Medal in 1926 for transport subjects at the London School of Economics.

Mr. F. J. Wagstaff

MR. F. J. WAGSTAFF, Acting District Passenger Manager, Euston, British Railways, London Midland Region, who, as recorded in our issue of December 1, has been appointed District Passenger Manager, Euston, commenced his railway career with the former London Midland & Scottish Railway in 1924 at Derby. After experience at various stations he was transferred to the District Goods & Passenger Manager's Office at Derby, in 1934. During the war, Mr. Wagstaff served with the Royal Air Force, and on his return to railway service was appointed in charge of advertising and publicity in the Derby District. In 1953 he was appointed the first Public Relations & Publicity Representative for the Nottingham District covering work previously carried out by the Derby, Leicester, and Stoke-on-Trent Commercial Officers. In 1957 he became Assistant District Passenger Manager (Sales), Euston, and in 1959, Acting District Passenger Manager, Euston.

MR. W. H. J. EVANS, Joint Works Assistant, Traffic Department, Waterloo, British Railways, Southern Region, who, as recorded in our October 6 issue, has been appointed Works & Modernisation Assistant, South Western Division, joined the railway as a Signal lad in 1919 and a short time later became a Messenger at Waterloo Parcels Office. In 1922 he became a Junior Clerk at Nine Elms Goods Depot and in 1924 he transferred to the London West District Superintendent's Office at Waterloo, as a Clerk in the Special Traffic Section. He subsequently gained experience in the Freight and Rules & Regulations Sections, and also the Train Supervision Office. Mr. Evans was appointed to the Works Section in the General Manager's Office in 1946 and in 1959 he became Works Assistant to the Traffic Department, the position he has now vacated.

MR. B. H. HAMMENT-ARNOLD, Assistant District Traffic Superintendent, Woking, British Railways, Southern Region, who, as recorded in our October 6 issue, has been appointed Passenger Officer, South Western Division, joined the Southern Railway in 1939 in the Stores Department. During the war he was a research assistant on the staff of the Scientific Adviser to the Allied Air Commander-in-Chief, South East Asia, and he returned to his former railway position in 1946. He moved to the office of the Chief Regional Officer, Southern Region, in 1948, and was selected for Cadet training a year later. In 1952 Mr. Hamment-Arnold was appointed to the Commercial Department at

Mr. B. H. Hamment-Arnold

Waterloo and from April, 1956, he was on loan for short periods to the District Goods Manager's Office, London Bridge, the District Traffic Superintendent's Office, Southampton, and the District Traffic Superintendent's Office, Orpington. He was appointed Assistant to the District Traffic Superintendent, Orpington, in December, 1957, and Assistant to the Traffic Superintendent, South Eastern Division, in October, 1958. He was appointed Assistant District Traffic Superintendent, Woking, in December, 1960.

MR. P. M. HAYDON, District Motive Power Superintendent, Woking, British Railways, Southern Region, who, as recorded in our October 6 issue, has been appointed Motive Power Officer, South Western Division, was educated at Rochester and Maidstone Technical Colleges, and joined the Southern Railway as an Apprentice at Ashford Works in 1940. He transferred to the Motive Power Department in 1947 and held positions as Locomotive Shedmaster at Dorchester, St. Leonards, and Tonbridge, between 1950 and 1957. Mr. Haydon was appointed Modernisation Assistant to the Motive Power Super-

Mr. P. M. Haydon

intendent, in 1957, and District Motive Power Superintendent, Brighton, in 1958. Two years later he was appointed District Motive Power Superintendent, Woking, the position he now vacates.

MR. A. H. WILLIAMS, A.M.INST.T., Traffic Assistant to the Divisional Traffic Manager, Merseyside & North Wales Division, British Railways, London Midland Region, who has been appointed Assistant Divisional Traffic Manager, Merseyside & North Wales Division, was educated at Bemrose College, Derby, and St. Johns College, Cambridge. He commenced his railway career with the former London Midland & Scottish Railway in 1935, as a Traffic Apprentice, and served during the war with the Transport Division of the Control Commission in Germany. On demobilisation, he returned to the railways as Assistant to the District Operating Superintendent, Stoke-on-Trent. He was successively appointed Assistant District Operating, Barrow; Assistant District Traffic Superintendent, Chester; District Operating Superintendent, Barrow, and then, in 1958, Traffic Assistant to the Divisional Traffic Manager, Merseyside & North Wales Division, the position he now vacates.

Mr. A. H. Williams

Permanent Way Institution

MR. A. H. CANTRELL, E.R.D., B.SC.(ENG.), M.INST.C.E., Chief Civil Engineer, British Railways, Southern Region, has been elected President-elect of the Permanent Way Institution. He was nominated as President for 1962 at the Institution's summer general meeting in June last and at the winter general meeting, to be held on January 27, he will be formally installed in succession to MR. A. K. TERRIS, Chief Civil Engineer, Eastern Region, British Railways. Mr. Cantrell, who is a Fellow of the Institution attached to the Croydon section, was elected to membership in January, 1946. He has been a member of Council since 1959 and acted as Chairman of the Croydon section during the year 1946 and from 1948-50. He is the first President since 1942 who has not been attached to the London section at some time during his years of membership.

Mr. A. H. Cantrell

Industrial

MR. M. LYTH has been appointed Director of Supplies, Griffin & George (Sales) Limited.

MR. W. F. LOCKWOOD, European Manager, Inspection Organisation, Robert W. Hunt Company, has retired.

MR. J. STEWARD, Tyre Division Representative, Dunlop Rubber Co. Ltd., has retired.

MR. J. G. R. WARBURTON has been appointed Sales Manager, Froghall, Thomas Bolton & Sons Ltd., from January 1. MR. A. R. D. KITSON will take up his appointment as London Sales Manager from the same date.

MR. F. A. BIGNELL has been appointed Financial Director, Pinchin Johnson & Associates Ltd.

MR. J. RUCINSKI, Director of Operations for South Asia & the Middle East, World Bank, has resigned from December 31. He will be succeeded by MR. G. M. WILSON.

MR. R. C. JENKIN has been appointed Manager, Coventry District Office, Associated Electrical Industries Limited.

MR. J. T. BROWN, Director, Atlas Express Co., Ltd., has been elected Chairman of the Vehicle Security Committee of the Road Haulage Association.

MR. ARNOLD CARR, Deputy Chairman & Assistant Managing Director, Thos. W. Ward Limited, has been appointed Joint Managing Director.

MR. LINDSAY HUNTING, Chairman of the Hunting group of Companies, is retiring from the Chairmanship, but will continue as Group Director. He will be succeeded by MR. C. I. M. HUNTING the present Vice-Chairman. MR. L. C. HUNTING will become Vice-Chairman.

MR. D. M. COLLEY, North of England representative for Bintex Limited, has been appointed Contracts Manager. He is succeeded in the North by MR. N. WILSON.

MR. A. R. HANICK, Secretary, Silentbloc Limited, has retired. He is succeeded by MR. R. E. UREN.

MR. J. E. SUNDERLAND, Director, Enfield Cables Limited, and Enfield-Standard Power Cables Limited, has been elected Chairman of the Cable Makers Association for 1962.

The late Mr. G. H. Partridge

At the cremation at Woodvale Crematorium, Brighton, December 11, of MR. G. H. PARTRIDGE formerly Chief Traffic Inspector, Great Western Railway, whose death was recorded in our December 15 issue, as well as family mourners, among those present were:—

Mr. C. J. Rider, Public Relations & Publicity Officer, British Railways, Western Region (also representing Mr. K. W. C. Grand, Member, British Transport Commission, and Mr. J. R. Hammond, General Manager, British Railways, Western Region); Mr. Gilbert Matthews, former Chief Operating Superintendent, British Railways, Western Region; Mr. S. G. Hearn, former Assistant General Manager, British Railways, Eastern Region; Mr. L. A. Morgan, Divisional Operating Officer, British Railways, Western Region, Cardiff (also representing Mr. W. R. Stevens, Divisional Traffic Manager, British Railways, Western Region); Mr. G. F. Tovey, Traffic Headquarters, British Railways, Western Region (also representing Mr. C. W. Powell, Operating Officer, British Railways, Western Region); Chief Inspector W. J. Richards and Inspector A. L. Pollard, Paddington, British Railways, Western Region; and Mr. H. F. Dalton, retired member of District Operating Superintendent's Office, Paddington.

Transport Users' Consultative Committee

County Councillor MISS J. E. MACINNES has been appointed a member of the Transport Users' Consultative Committee for the North Western Area until June 30, 1963, in place of the late County Alderman H. HOWARD ROBINSON.

NEW EQUIPMENT *and Processes*

MODIFIED TECHNIQUE IN Bridge Engineering

The production of the Preflex Beam has introduced a modified technique into bridge engineering, at present in the case of multi-girder spans but doubtless capable of development with larger girders.

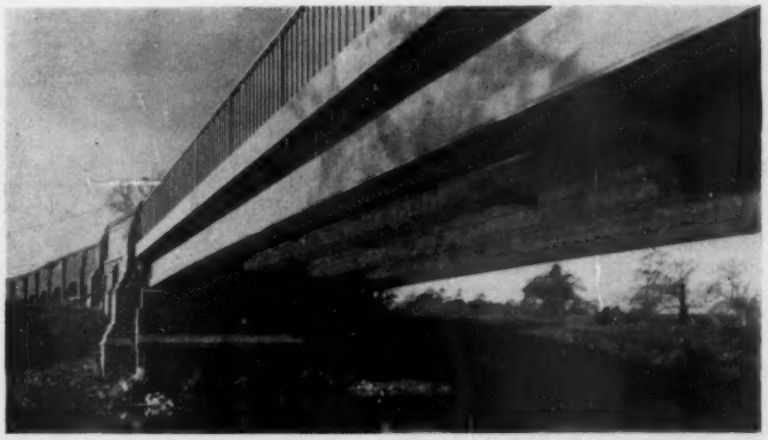
As now in use in a highway bridge it consists of a high-tensile R.S.J. stiffened by encasement of the tension flange in high-grade reinforced concrete. The joist is first prestressed to the full design-loading, and while held in that condition has its lower flange encased in the concrete reinforced both longitudinally and transversely.

When the concrete has hardened, the load is slowly released, so that the concrete is gradually compressed by the elastic recovery of the steel. Therefore, when the beam is loaded in service the concrete is partly decompressed without cracking or loss of stiffening value. After erection the remainder of the beam is also normally encased in concrete, further increasing its stiffness.

Used for 64-ft. road-bridge span

Though not yet used in railway underbridge work, the Preflex beam would appear to be suitable for road overbridges, as it has been approved and adopted by at least one county council authority. There would seem to be no reason why it should not be adapted to underbridge construction.

The Preflex system was used in a new road bridge over the Wiltshire Avon at Kellaways near Chippenham, completed



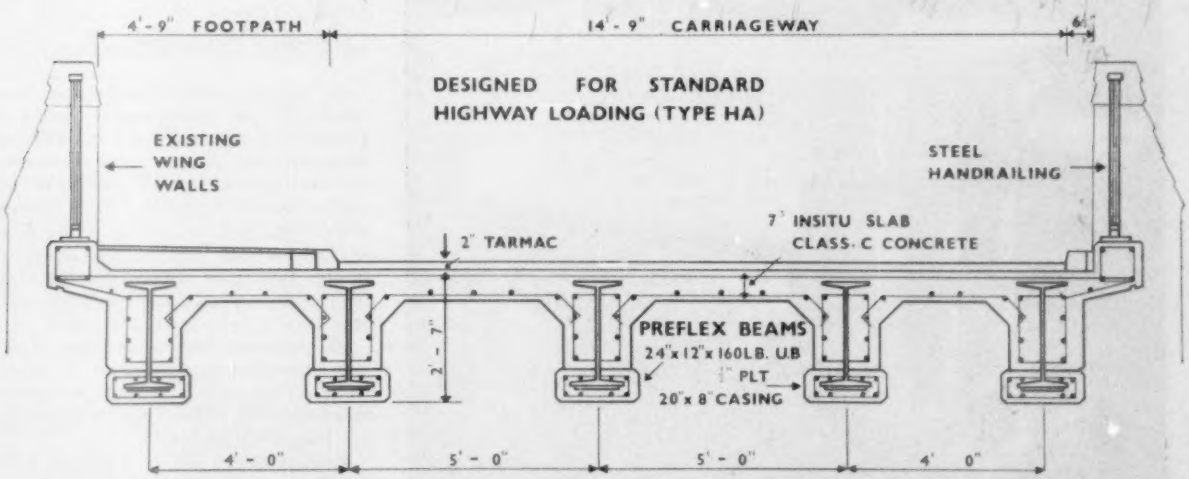
in October by the Wiltshire County Council. This bridge has a main span of 64 ft. between beam bearings and carries a roadway 14 ft. 9 in. wide flanked on one side by a 4 ft. 9 in. footway. There are five Preflex beams, each weighing 10½ tons and measuring 66 ft. x 24 in. x 12 in. x 160 lb. with a 10-in. plate welded to its lower flange. The encasement of the latter measures 20 in. wide x 8 in. deep. During precompression the casings were shaped at each end for seating on Andre rubber blocks.

As the diagram shows, the decking consists of Class "C" *in-situ* concrete suitably reinforced. The beams were handled like steel girders and lifting is not restricted to specified points along them. It is claimed that for any particular span and loading the construction depth and weight of Preflex beams are less than for conventional beam systems; conversely for a given construction depth and loading, longer spans may be bridged.

Further details can be obtained from the Preflex Department of Boulton & Paul Limited, Riverside Works, Lenwade, near Norwich.

WELDING GAS ECONOMISER

The Harris 64-2 gas economiser for welding torches consists of a combined torch-holder and gas shut-off lever which is finely set to require minimum effort to shut off the gas flow. This prevents excessive wear and damage to the valve seats. A useful safety factor is that the neoprene valve seats are virtually flame-proof. Molybdenum disulphide "O"



CROSS SECTION AT MID-SPAN KELLAWAYS BRIDGE, CHIPPENHAM, WILTSHIRE 64'-0" CENTRES OF BEARINGS

ring glands are fitted to give longer working life. The body of the economiser is a hot brass pressing mounted on a silicon cast iron base. When detached from its base, the economiser can be mounted wherever required by the welder.

Further details can be obtained from British Industrial Gases Limited, 700, Great Cambridge Road, Enfield, Middx.

RUBBER UPHOLSTERY STRAPPING

Ribflex upholstery strapping consists of a rubber compound used with a veneer of synthetic material. This lamination of natural and synthetic rubber has a damping effect on the yield of the natural rubber and causes complete recovery. The ribbed pattern reduces the spread of accidental cuts or tears.

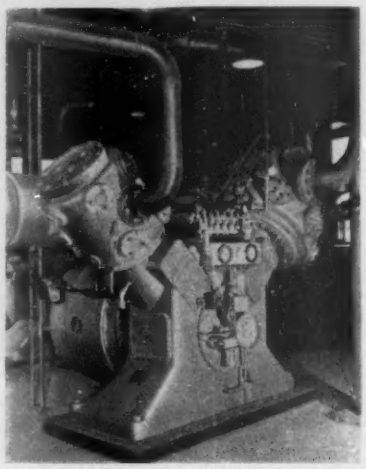
The strapping is supplied fitted with patent non-sag clips, two alternative types being available, one for use on wood, the other on metal. The clip forms an integral part of the strapping.

Further details can be obtained from the General Rubber Goods Division of the Dunlop Rubber Co., Ltd., Briset House, Briset Street, London, E.C.1.

COMPRESSOR RANGE

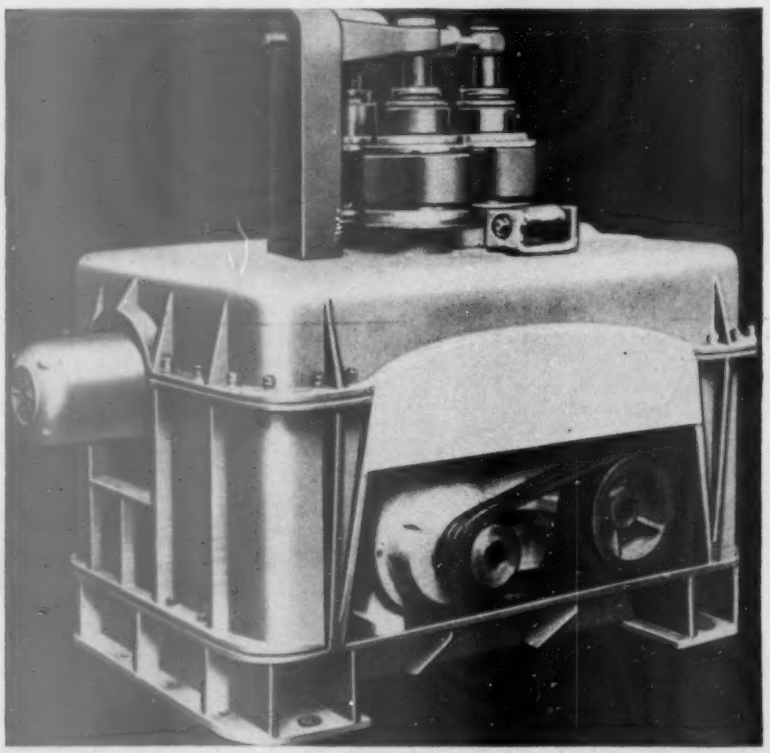
The "Y" class of stationary air-compressors consists of units of the water-cooled, double-acting, crosshead type with cylinders set at 90 deg. There are seven sizes, with outputs from 372 cu. ft. per min. to 1,615 cu. ft. per min. at pressures from 80 lb. per sq. in. to 125 lb. per sq. in. Horsepower requirement is from 75 to 300. Multi-stage units are available to give pressures up to 3,000 lb. per sq. in. The compressor can be driven by flange-mounted motor, direct-coupled motor, or by vee belt.

The ribbed and webbed frame, integral with the crankcase, is of high-strength cast-iron. It has been designed to support a flange-mounted motor. The guides for the double-acting crosshead are cast integral with the frame. Cylinders are cast in one piece of Meehanite with a thickness adequate for two re-borings. Valves are placed radially in each end of the cylinder barrel and the entire area of the cylinder head is water-jacketed. The first-stage piston is made of aluminium alloy and the second-stage is of cast iron, both being balanced for weight.



Simplate valves consisting of ground concentric discs operating over annular ports in a valve seat are used. A shell-and tube intercooler is placed between the cylinders. The crankshaft is supported by three self-aligning spherical roller bearings. The connecting rods are drop-forged of alloy steel. Both crankshaft and connecting rods are drilled for pressure lubrication.

Further details can be obtained from the Consolidated Pneumatic Tool Co., Ltd., 232, Dawes Road, London, S.W.6.



SECTION BENDING MACHINE

The Bochumer range of section bending machines one model of which is illustrated below, is available in this country.

With the exception of the smallest model, all the machines are of the horizontal type and have maximum capacities from 2 in. x 2 in. x $\frac{1}{8}$ in. up to 8 in. x 8 in. x $\frac{7}{8}$ in. angles or sections together with their equivalent moduli. The eight available models are all 3-roller types with the exterior rollers driven and with the central press roller free running. All the rollers are tied by connecting bars, which relieves the table assembly of the bending strain and also ensures that the roller spindles remain parallel. Tie bar connections are easily removed to allow a complete circle to be unloaded after bending. Guide rollers, adjustable for height, maintain the work in a horizontal plane and, by careful adjustment, unsymmetrical sections can be kept level. The bending rollers supplied as standard equipment are universal and are used for angle iron, channels, "T" sections, flat, and square bars.

Further details can be obtained from the United Kingdom distributors, the Argall Machine Tool Co. Ltd., 162, Buckingham Palace Road, London, S.W.1.

MATCHED LOUD SPEAKERS

A "family" of loudspeakers has been introduced. It consists of a range of instruments matched both in performance and in appearance to meet a variety of requirements in the installation of public address systems. Thus, where several loudspeakers are to be installed in sight of one another, the aesthetics of the locality as well as the efficiency of sound transmission are both well served.

Six speakers form the series. Each has a nominal impedance of 15 ohms. Volume controls are available for the two smaller models. Mountings are adjustable and integral on all models.

Further details can be obtained from the Westrex Co. Ltd., 152, Coles Green Road, Cricklewood, London, N.W.2.

U.I.C. PROGRESS DURING 1961

Committees and working parties cover a multitude of aspects of railway working

During its meeting in November, 1960, the General Assembly of the U.I.C. approved reorganisational measures to improve the working conditions and organisation of the Union's committees and offices, centres and bureaux. In 1961, meetings were held by the heads of the Way & Works, Motive Power & Rolling Stock, Commercial Staff, and Legal Departments.

As in 1959 and 1960, the commercial committees (1st, 2nd and 3rd committees) and the technical committees (4th, 5th and 7th committees) held two separate sessions.

Future of passenger traffic

Studies on the future of passenger traffic gave rise to recommendations which were forwarded to the appropriate bodies. They dealt, in particular, with measures enabling the formation of international trains on important services to be as uniform as possible, the examination of journey compensation with a view to improving present arrangements, the improvement of the systems followed in respect of train staff, and the possibility of limiting the reservation of seats to six per second-class compartment. Proposals relative to international fares and the commercial departments were also studied. New measures were adopted for the reservation of seats and *couchettes*.

A standard nomenclature of goods (N.U.M.) was prepared by a joint U.I.C./O.S.J.D. working party for probable adoption by all networks belonging to the two organisations.

A model domestic tariff was prepared to which railway administrations would be able to refer when undertaking tariff reforms.

The principal features of an international transit tariff (T.I.T.) were adopted. Investigation into the possibility of implementing this tariff showed that its application at present would meet obstacles originating outside the railway sphere and study on this project was suspended.

An agreement was drafted with representatives from the International Union of Associations of Owners of Private Wagons (U.I.P.) enabling damage caused to the railway or to third parties by privately-owned wagons to be settled on a contractual basis. The model registration contract for privately-owned wagons was amended. The new provisions will come in force on January 1, 1962, at the same time as the amendments made following the revision of the "International Regulations concerning the transport of privately-owned wagons—R.I.P."

Operating

In the sphere of operating, the committees continued their studies on the measures to be taken in respect of international passenger trains. Regulations were drawn up to increase the comfort and pleasure of rail journeys. In view of the success of the car-sleeper trains, it was decided to make a comparison between the various types of rolling-stock in service, taking into account their individual possibilities as well as their profit-earning capacities. Work was continued on the improved forwarding of goods and the productivity of rolling-stock: methods were studied of speeding up wagon turn-round, particularly in the case of refrigerator and empty wagons. A general report on the overall studies carried out in this connection will be drafted during 1962.

Study was pursued by rolling-stock and operating experts into the conception and use of rolling-stock. Further standardisation of carriages was effected through the unification of component parts and the fittings and accessories at the disposal of passengers. The standardisation of new categories of wagons gave rise to the laying-down of characteristics for a covered bogie wagon, a high-side open bogie wagon, a refrigerator bogie wagon, and a mixed flat high-side open wagon.

Interchangeability of components

Measures adopted or envisaged in the field of motive power and rolling-stock covered the interchangeability of vehicle components; the qualitative and dimensional normalisation of rolling-stock or the parts themselves; braking; train heating, and provisions to facilitate the interpenetration of motor-driven stock. Revision was carried out of specifications for the supply of rolling-stock constructional parts and components. Study was undertaken on the use of the electro-pneumatic brake and its possible standardisation. Work on the preparation of Volume II of the summary of terms relative to the use and exchange of rolling-stock was almost completed. Publication is scheduled for 1962.

The conclusions put forward by the working party entrusted with the study of the technical and economic conditions for the development of the transport of road vehicles or wagons were approved and incorporated in leaflets which have come in force or will do so on January 1 next.

An international pallet pool was set up between eight administrations, providing for the joint use of pallets of member networks and covering part-load and full wagon load traffic.

Way & Works

The 7th Committee improved specifications for the supply of rails and approved a report on the use of rubber for bridge supports. Recommendations for the protection of bridge facing plates were drawn up. Study on track maintenance made satisfactory progress; results obtained will be published next year.

A leaflet concerning the establishment and technical operation of international teleprinter services was published. The committee began study on the technical aspects of the use of electronic equipment.

In collaboration with the 5th Committee, the 7th Committee furthered its study on the kinematic gauge of rolling-stock (motor-driven units and carriages) and approved the line classification regulations with a view to the running of motor-driven units in international traffic.

Studies of a general nature included those of the 3rd Committee on statistics, accountancy, costs and mechanical data processing, and those of the 6th Committee on economic matters.

Unification of statistics

The 3rd Committee furthered its work on the unification of statistics and methods of compiling them, and undertook study on the preparation and publication of information.

Measures were adopted to take into account the exceptional situations which could arise in determining reciprocal debits and credits in the event of monetary manipulations. A sub-committee was set up to study financial and general accountancy problems.

Progress was made on bringing costing leaflets up to date; studies were completed on the cost of car-sleeper trains and on bringing R.I.V. hire charges in line with costs in the case of special wagon. Study on the cost of transport in privately-owned wagons was almost completed.

The question of mechanical data-processing equipment gave rise to the publication and distribution of informatory memoranda and to a closer collaboration between networks. The studies of the sub-committee on mechanical data-processing covered investigation into the use of punched tape as a means of storing information; the use of electronic computers, particularly for operational research, problems connected with the exchange of quantitative information between the networks and the study of standardised classification.

The economic studies entrusted to the 6th Committee were extensively referred to in the report on the "Economic problems of the Railways," drafted at the request of the European Conference of Ministers of Transport.

Unequal competitive conditions

Special reference was made to questions pertaining to the estimation and comparison of the cost to the community by road, inland waterway, and air transport. These studies, which were difficult to make because of the limited information available and the necessity of cross-checking that data, have progressed. They will reveal the unequal competitive conditions under which the various forms of transport operate.

Two other reports were published this year. The first gave details of the improved productivity recorded throughout 1959 and 1960 and stressed the importance of the effects of the power consumption economies made by the railway on the national and European power consumption figures. The second discussed the relationship between the development of railway traffic and

economic activity and assessed the possibility of estimating future traffic.

The 6th Committee also studied staff questions and continued to follow the work of the 4th and 5th Committees to which the conclusions of its report on the determination of the optimum lifetime of rolling-stock must be submitted.

The 8th Committee, which studies legal matters, drafted a leaflet on arbitration. In connection with the standardisation of the U.I.C. Code provisions relative to liability, the studies chiefly covered the running of privately-owned wagons and were carried out in liaison with the special working party on privately-owned wagons and with the 2nd Committee. The committee also continued its studies on the legal problems connected with rail/road crossings, the construction of pipelines on railway-owned land, and the use of radios and tape recorders on railway property open to the public.

The working party on Supplies undertook surveys on market changes and the level of prices of main commodities used by the railways. It was responsible on several occasions for the representation of the railways as consumers at the meetings of the European Six Country Communities. Its other studies covered principally the functioning of the supply departments, stock management, the joint purchase of spare parts, and agreements concerning the introduction of after sales services.

Work of other bodies

In conjunction with industrial representatives, the Office for Research & Experiments (O.R.E.) pursued its work on the standardisation of ordinary wagons—of present and future types—and of diesel locomotives. Interesting results were also obtained in respect of construction of pantographs, effects of field shunting on track circuits, air-conditioning, buffers with a large works-absorption capacity, and determination of dynamic forces on bridges.

The Information & Publicity Centre of the European Railways (C.I.P.C.E.) was set up in November, 1960. Replacing the former C.I.C.E., the C.I.P.C.E. is divided in two sections, one dealing with publicity matters and the other with public relations. The Publicity Section prepared various publicity brochures, including a time-table booklet and a special publication on the T.E.E. trains, and a poster on the T.E.E.M. trains.

The control committee of the Public Relations Section arranged the fortnightly distribution, as from the beginning of 1962, of a railway news sheet. A " Quiz " brochure was prepared by the C.I.C.E. for children of school age. During the year, the London Transport Executive and the Stoomvaart Maatschappij " Zeeland " became members of C.I.P.C.E.

The International Railway Documentation Bureau (B.D.C.) endeavoured to improve contacts between the documentation centres of the various administrations. Representatives of the administrations of the Scandinavian and Eastern European countries took part in the work of the technical committee, enabling the exchange of experiences within the committee to be developed.

The International Railway Film Bureau (B.F.C.) was set up in November, 1960, to replace the annual meeting of railway film specialists. Its first meeting was held in May, 1961, on the occasion of the First International Railway Film Festival organised at Zurich.

The Brussels Central Clearing House (B.C.C.) continued its work on behalf of the member administrations, enabling more than three-quarters of the debits and credits of its members to be settled without transferring capital.

The activities of the Eurofima Company placed at the disposal of its members resources to the value of Sw.Fr.80 million derived directly from two loans of almost equal value, one being raised in Switzerland and the other in the Netherlands, the latter being the first foreign loan raised in that country.

The International Union of Railway Medical Services (U.I.M.C.) held its ninth Congress at Istanbul early in September, 1961. This congress was devoted to the examination of medical standards for the aptness of staff to hold positions involving safety. Representatives of the medical departments were re-elected to the Standing Committee. Two representatives of two additional networks (Poland and Sweden) were appointed as Vice-Chairmen.

Medical services

The Trans-Europ-Express Organisation further studied the problems of efficient running and development of T.E.E. services. For the 1961 summer period. Polycurrent multiple-unit train sets were introduced on the Paris-Milan (Cisalpin) and Zurich-Milan (Gottardo and Ticino) services.

The organisation dealing with international travel facilities for railway staff (F.I.P.), had the task of simplifying and facilitating the exchange of international travel facilities.

Participating organisations

The following briefly summarises the work of the railway organisations linked with the U.I.C. by the 1951 Agreement and Protocol.

International Rail Transport Committee (C.I.T.)

During the year, the work of this body dealt chiefly with the adaptation of certain C.I.T. regulations to the new provisions of the C.I.M. and C.I.V. which were adopted by the 6th Revision Conference of these Conventions of February, 1961.

European Goods Trains Timetable Conference (L.I.M.)

The L.I.M. Conference organised the Trans-Europ-Express-Goods (T.E.E.M.) services. The organisation of these trains was discussed within the L.I.M. by a special working party presided over by the Swiss Federal Railways.

International Wagon Union (R.I.V.)

The R.I.V. published directives relative to the loading of heavy objects and sheet-metal. Studies are being carried out in conjunction with the U.I.C. with a view to the re-drafting of the R.I.V. regulations to improve their presentation and layout and on the costing of certain wagons.

" Europ " Wagon-Operating Pool

The Europ Committee carried out extensive study on the future composition of the Europ pool. The Committee took note of the number of additional wagons which its members intended allocating to the pool to be in a position to meet the obligations laid down in the Europ Agreement. The Committee also examined the possible inclusion of specialised wagons in the Europ Pool. Three types of wagons were selected for detailed study: the high capacity two-axle covered wagon, the two-axle wagon with an opening roof, and the two-axle high-side open wagon with automatic gravity unloading.

European Passenger Trains Timetable Conference (C.E.H.)

The European Passenger Trains Timetable Conference (C.E.H.) met in Brussels from September 27 to October 3, 1961. The work concerned in particular the study of measures to be taken within the C.E.H. to achieve maximum uniformity in the formation of passenger trains, in accordance with the request made by the U.I.C. Board of Management. Some progress was made, and, as from the next timetable period, a certain number of trains will be made up of the carriages of one administration only. The Conference re-elected the Swiss Federal Railways as Managing Administration for 1962-66.

International Carriage & Brakevan Union (R.I.C.)

The Committee of the International Carriage & Brakevan Union (R.I.C.) made amendments to the text of the regulations covering the reciprocal use of carriages and brakevans in international traffic. It also studied compensation rules laid down in the regulations with a view to achieving greater uniformity in the appearance of international passenger trains.

The Through Carriage Conference also approved the new text of the R.I.C. Regulations which is to be known as the Brussels Edition and will come in force on January 1, 1962 for a period of five years. It examined the problem of the payment of hire charges for wagons used in the formation of car-sleeper trains and decided not to alter the present system of special agreements because of the changing nature of the traffic in question. It recorded the progress made in the study on the modernisation of seat reservation systems.

Swiss Federal Railways was re-elected Managing Administration for the 1962-66 period.

Union of European Railway Road Services (U.R.F.)

The number of member administrations of the Union has increased to 15 following the admission of the Greek State Railways.

Various studies were undertaken relative to forms of publicity, extension of the Eurailpass, technical regulations, and international goods services by road.

Relations with international organisations

Economic Commission for Europe (E.C.E.)

The U.I.C. takes regular part in the work of the E.C.E. Inland Transport Committee and its subsidiary bodies. A large number of the questions discussed by the sub-committees and working parties at Geneva has been previously studied by U.I.C. committees, and it is often possible to put forward the joint views of the railways or at least to make a positive contribution to furthering the studies.

Work carried out by the Geneva organisation in which the U.I.C. was especially associated, included:—

An agreement relative to the vehicles and equipment used for the conveyance of perishable foodstuffs and the conditions under which certain of these foodstuffs are conveyed in international traffic;

Study of dimensional and qualitative standardisation of packaging used for perishable foodstuffs;
The adoption of a resolution recommending Governments to take steps likely to reduce standing and shunting time of wagons at frontier stations;
Tariff studies covering in particular the compilation of a standard nomenclature of goods by a joint U.I.C./O.S.J.D. working party to produce a document likely to be adopted by all Eastern and Western networks;
Study on the standardisation of road signals at level-crossings.

On several occasions during 1961 and frequently on the initiative of the U.S.S.R., the U.I.C. was requested to prepare notes or memoranda on various technical, accountancy and statistical matters.

European Six Country Community

The railway administrations of the six countries of the European Community, meeting within the restricted group of the six under the aegis of the U.I.C., have followed very closely all aspects of the work carried out at Brussels and Luxembourg relative to rail transport. In certain instances, the networks have been directly associated in this work.

The group submitted to the E.E.C. General Transport Administration on November 7 last a memorandum setting out its views on joint transport policy within the community on behalf of the six administrations.

The study was published in booklet form and sent to all U.I.C. member administrations. It was also widely distributed in European economic circles.

European Conference of Ministers of Transport (E.C.M.T.)

In 1961, the E.C.M.T. consulted the U.I.C. for the first time on traffic forecasts and automatic coupling.

The General Assembly was informed that the E.C.M.T. had requested the U.I.C. to submit an overall report on the problems of the railways in the general economy. The report was a re-appraisal of the study carried out in 1956 and 1957 on the financial situation of the railways. This report, together with a summary, was submitted in July to the E.C.M.T. and widely distributed to outside circles.

The E.C.M.T. has already studied the U.I.C. report. It has been discussed by the Council of Ministers on several occasions. Two working parties were set up to examine the measures confined to the railway and those applicable to transport policy.

It can be stated with satisfaction that the U.I.C. report was very favourably received by all professional transport circles including those outside the 17 member countries of the conference.

Technical Unity of Railways (U.T.)

Immediately after the final amendments, the draft of the new wording of the Technical Unity Regulations was recently submitted by the Swiss Federal Transport Office, which manages Technical Unity, to the Ministries of Transport of the participating countries.

Organisation for the collaboration of Railways (O.S.J.D.)

The relations established in 1959 and 1960 between the U.I.C. and the O.S.J.D. at the request of the latter were strengthened. O.S.J.D. representatives took part in a number of U.I.C. meetings and U.I.C. representatives attended O.S.J.D. meetings. Collaboration was strengthened following the setting-up of two joint working parties, one to draw up a standard nomenclature of goods and the other to study a European automatic coupling system.

Central Office for International Rail Transport (O.C.T.I.)

New international conventions covering the carriage of passengers and goods by rail were signed at Berne on February 25. These conventions, which will become applicable after receiving Parliamentary ratification in many countries, will replace the C.I.V. and C.I.M. dated October 25, 1952, which themselves only became applicable as from March 1, 1961.

International Labour Organisation

The Inland Transport Committee of the International Labour Organisation held its seventh session at Geneva from May 8 to 19, during which it examined three reports. Two dealt with the general working conditions of railwaymen and, with the social consequences of developments in rail and road transport techniques.

The U.I.C. was present for the first time as an observer at the meetings of the committee, which grouped together representatives of a certain number of railway administrations in the national delegations.

The U.I.C. also continued to work closely with the International Chamber of Commerce (I.C.C.), the International Bureau for Containers & Combined Transport Equipment (I.C.B.) and the main international electricity organisations. Close relations were also maintained with numerous other international bodies.

Progress at Colchester

A £1¼-million modernisation scheme by the Eastern Region of British Railways is rapidly changing the rail landscape at Colchester, an important junction on the East Anglian main line. Major track alterations, including the construction of a 1,200-yd-long dive-under line for Clacton-bound trains (described in our issue of June 9 last), are a special feature. This new single-track line, by-passing under the main line, will cut delays and speed the services.

The finishing touches are now being put to the remodelled station and a new diesel servicing depot has also been brought into operation. A new signalbox is due to go into service early in the New Year.

The climax of the whole scheme will come when "The Gap"—between Chelmsford and Colchester—is electrified, and this will enable through electric trains to run between Liverpool Street, Clacton and Walton-on-Naze. The whole of the work has been carried out under the general direction of Mr. A. K. Terris, B.Sc., M.I.C.E., Chief Civil Engineer, Eastern Region.

Main contractors were as follow:—

Dive-under line	...	Cementation Co. Ltd., London
Station buildings		
Up side ...	...	Holliday & Greenwood Limited, London
Down side	...	Hutton (Builders) Limited., Birch, nr. Colchester
Island platform	...	Joseph Moss & Sons Ltd., Colchester
Signalbox ...	...	Cubitt & Gotts, Ipswich
Diesel depot	...	Holliday & Greenwood Limited

Channel Island fares and services

The increase in sea travel to the Channel Islands this year has made necessary revised arrangements by the Southern Region of British Railways for next year.

The one-class luxury ships brought into service last Spring have reversed the steady fall in passengers in recent years. Last summer the ships carried more than 250,000 passengers, over 10 per cent more than in 1960.

Next Summer, boats will leave the Islands earlier and extra time will be allowed at Guernsey to avoid the delays brought on by the summer rush this year.

There will be more boat trains from Weymouth to London, and the stop at Poole on the down boat trains will be cut out to help improve timekeeping.

A special bus link will be used from Weymouth Town station to the quay for some trains to relieve pressure on the quayside railway lines.

Because many people are now taking later Summer holidays the Summer services will be

Main line crossing the dive-under line is shown to left of picture

New diesel depot (centre foreground) and goods sidings

extended next year to include the last week in September.

Most Channel Islands fares will be increased slightly from January 1, 1962, because they are now partly affected by last year's increases in the cost of rail travel. The steamer fares between Weymouth and the Channel Islands will remain unchanged. It means that the cheapest London-Channel Islands ordinary return fare—second class rail, but with the full one-class boat facilities—will go up by 6s. to £7 14s. 6d.

Staff & Labour Matters

Shorter working week

The Railway Staff National Tribunal has issued its decision on the method of implementing a reduced working week for railway salaried and conciliation staff.

The British Transport Commission had promised in April to consider a reduction in the standard working hours from 42 to 40 a week for salaried staff, and from 44 to 42 a week for conciliation staff, provided that ways and means could be found to reduce the impact and keep the cost within reasonable limits.

The Tribunal, by a majority decision, has awarded that for footplate staff and other trainmen the shorter working week should be implemented on the basis of an extra rest day every four weeks which, in effect, means 21 turns of 8 hr. in each four weeks. The Commission had sought a more flexible arrangement to fit in with timetable and traffic requirements.

For conciliation grades other than trainmen, the Tribunal has awarded that various methods of rostering shall apply.

The revised arrangements for conciliation staff will come into operation from January 1, 1962, or from the beginning of the second full pay period following the date of acceptance of the award, whichever is the later.

In the case of salaried staff, the only dispute was the operative date for the introduction of the standard 40-hr. week. The unions asked that it should be implemented from October 30, 1961. The Tribunal has awarded that it shall take effect from January 1, 1962.

The Tribunal's decision is not binding on the parties and the Commission and the executives of the trade unions are considering the position.

CONTRACTS AND TENDERS

Orders for Plasser tamping machines

Plasser Railway Machinery (G.B.) Limited has received an order for five of the small tamping machines model KST-95, system Plasser-Theurer, non-synchronous, complete with set-off equipment for one-man operation for delivery to the Coras Iompair Eireann.

South African Railways has placed an order for 11 Plassermatic VKR-04 PX-10 all-hydraulic, automatic lifting/levelling and tamping machines plus six conversion units for converting existing models VKR-03 to

Plassermatic VKR-04 PX-10. A full maintenance contract for 19 machines has also been placed.

Leyland Motors Limited has received a repeat order from Coras Iompair Eireann for a fleet of 90 Leopard single-deck coach chassis.

British Railways, London Midland Region, has placed the following contracts:—

The Trinidad Lake Asphalt Co. (North Western) Ltd.: resurfacing portions of platforms at St. Helens Shaw Street Station;

Wilson Lovatt & Sons Ltd.: addendum for provision of openings in the Midland Shed at the new freight terminal, Leicester Queen Street;

Leonard Fairclough Limited: construction of a new underbridge to carry the railway over the Bletchley Road at Bletchley Station

Szerelmey Limited: repairs to stone balconies at St. Pancras Chambers.

The Export Services Branch, Board of Trade, has received calls for tenders as follow:—

From Argentina:

Railway points, switches, and shunting apparatus.

The issuing authority is the Argentine/Bolivian Mixed Railway Commission (Commission Mixta Ferroviaria Argentina-Boliviana Construccion Ferrocarril Yacuiba-Santa Cruz de la Sierra-Sucre) Calle Charcas 1422, 4° piso, Buenos Aires, to which bids should be sent. Specifications and details are obtainable from the above address. The tender No. is 63. The closing date is January 2, 1962. The Board of Trade reference is E.S.B./34924/61.

From Australia:

1 P.A.B.X. complete with manual telephone switchboard, power plant, distribution frame, cable runways, cables, wiring, and telephones, installed capacity for 500 local extensions, 50 both-way junction lines, and 25 tie-lines, to replace existing manual system and provide interworking facilities with an existing exchange.

The tender No. is 62127. The closing date is February 28, 1962. The Board of Trade reference is E.S.B./37902/61.

1 centre-lathe, sliding, surfacing and screw-cutting type, swing-over bed, 17 in. diameter, 54 in. between centres, 29 in. swing in gap, with gap bed, all-geared headstock and accessories.

The tender No. is 62130. The closing date is January 17, 1962. The Board of Trade reference is E.S.B./37904/61.

2,000 rubber-cushion type draft gears, capacity 12,500 ft. lb. suitable for use in goods wagons.

The tender No. is 62129. The closing date is January 10, 1962. The Board of Trade reference is E.S.B./37903/61.

The issuing authority for the above tenders is the Secretary, Victorian Railways, Railway Administrative Offices, Melbourne, C.1, to whom bids should be sent.

From Egypt:

Supply of row ball bearings.

The issuing authority is the Egyptian Railways. Bids should be sent to the Purchases & Stores Department, Railway Buildings, fifth floor over Shoubra subway, Cairo. The tender No. is E.R.311.G.8/122. The closing date is December 26, 1961. The Board of Trade reference is E.S.B./36054/61.

From India:

3,137 wheel sets, broad-gauge, 22½ ton axle load

11,366 wheel sets, broad-gauge, 20 ton axle load

21,727 wheel sets, metre-gauge, 12 ton axle load

300 wheel sets, metre-gauge, 10 ton axle load.

The issuing authority is the Director of Railway Stores, Railway Board, Rail Bharan, Raisina Road, New Delhi, to whom bids should be sent. The tender No. is G.P.28 of 1962-63. The closing date is January 16, 1962. The Board of Trade reference is E.S.B./37502/61.

Erection and installation of a fishplate finishing plant at Durgapur Steel Plant.

The issuing authority is the Chief Controller of Purchase & Inspection, Central Purchase Organisation, Hindustan Steel Limited, 7 Wellesley Place, Calcutta, 1, to whom bids should be sent. The tender No. is CPO/CDB/D/920/RM-63(1). The closing date is January 15, 1962. The Board of Trade reference is E.S.B./37917/61.

Design and supply of 16 and 20 separate sets of electrical traction equipment, 25 kV. single-phase, a.c. to suit metre-gauge electric locomotives as per specification EL.141-61.

The issuing authority is the General Manager, Chitteranjan Locomotive Works, Chitteranjan, West Bengal, India, to whom bids

should be sent. The closing date is March 8, 1962. The Board of Trade reference is E.S.B./37908/61.

Supply of equipment, technical supervision, and maintenance for six months, of route relay interlocking at Liluah.

The issuing authority is the General Manager, Eastern Railway, Calcutta, to whom bids should be sent. The tender No. is ER/LIH/R.Relay/VI. The closing date is May 14, 1962. The Board of Trade reference is E.S.B./37906/61.

From South Africa :

Supply and delivery of six hydro-pneumatic jacks of different specifications required at various centres.

The tender No. is F.467. The closing date is January 3, 1962. The Board of Trade reference is E.S.B./37524/61.

32 items C.C.F. Brill vehicle spares.

The tender No. is F.486. The closing date is December 27, 1961. The Board of Trade reference is E.S.B./37523/61. The issuing authority for the above tenders is the Stores Department, South African Railways. Bids should be sent to the Chief Stores Superintendent, S.A.R., P.O. Box 8617, Johannesburg.

From Sudan :

4 10-ton wire slings 40 ft. long x 3¾ circ.
4 5-ton wire slings 20 ft. long x 2¼ circ.
10 2-ton wire slings 24 ft. long x 1¾ circ.
5 5-ton wire slings 14 ft. long x 2¾ circ.
2 5-ton wire slings 24 ft. long x 2¾ circ.
2 3-ton wire slings 24 ft. long x 2¼ circ.
2 5-ton wire slings 30 ft. long x 2¾ circ.
4 motor car loading slings.

The issuing authority is the Office of the Controller of Stores, Atbara, Sudan, to which bids should be sent. The tender No. is 2522. The closing date is January 9, 1962. The Board of Trade reference is E.S.B./37515/61.

From Thailand :

10,000 sets oil pads complete with spring frame as per drawings No. LV. 2-2023/3.

The issuing authority is the State Railways of Thailand, Yod-Se, Bangkok, to which bids should be sent. The tender No. is 04468. The closing date is January 3, 1961. The Board of Trade reference is E.S.B./37271/61.

47 items of angle iron of various sizes and quantities

15 items of steel plate of various sizes and quantities.

The issuing authority is the State Railways of Thailand, Construction Department, Bangsue, Bangkok, to which bids should be sent. The tender No. is Ghor. Sor. 41/2504. The closing date is January 2, 1962. The Board of Trade reference is E.S.B./37272/61.

From Uruguay:

Supply of steel springs for locomotives, coaches, and wagons.

The issuing authority is the Administracion de Ferrocarriles del Estado Gerencia General, Departmento de Proveeduria, to which bids should be sent. The tender No. is 389/58. The closing date is December 27, 1961. The Board of Trade reference is E.S.B./36982/61.

Further details relating to the above tenders together with photo-copies of tender documents, unless otherwise stated, can be obtained from the Branch (Lacon House, Theobald's Road, W.C.1).

NOTES AND NEWS

Argentine rail strike. The 42-day-old strike by Argentine railway workers was lifted on December 11.

Automatic coupler demonstration. The International Union of Railways (U.I.C.) arranged a demonstration of automatic couplers in connection with its 20th General Assembly in Paris, on November 29. The illustration below shows in the foreground, left to right, Mr. Louis Armand, Secretary General, U.I.C.; Mr. R. Buron, French Minister of Public Works & Transport; and Mr. J. Ratter, Member, British Transport Commission. Mr. Ph. Dargeon, General Manager, Socéité Nationale de Chemins de fer Français, is on the extreme right.

Interested group at the demonstration of automatic couplings in Paris

Electrical Engineers Exhibition. The 11th Electrical Engineers Exhibition will be held at Earls Court, London, from March 20 to 24.

Rebuilding of Euston Underground Station. Work has commenced on the reconstruction of Euston Underground Station. The complete scheme provides for a new booking hall, four flights of twin escalators, an interchange subway, and platforms for the proposed Victoria line, which still awaits official sanction.

Belgian electric company change of address. The address of La Télémécanique Electrique Belge is now 181, Chaussée de Mons à Leeuw-St.-Pierre, Belgium.

Company merger. The machine tool interests of the Thos. W. Ward group, represented by Woodhouse & Mitchell and Frederick Town & Sons Ltd., have been merged under the title of Town Woodhouse Limited as from December 31.

Railway plan cancelled. The United States Department of Defence has cancelled a programme for using railway wagons as missile-launching platforms on which £35 million has already been spent.

Automatically-controlled underground train. An automatically-controlled underground train is to be tried on the New York Underground for six months. This train carries neither driver nor guard, and it is claimed that it will save about $170,000 a year.

International apprentice competition. The 10th International Apprentice Competition of the City & Guilds of the London Institute was held in West Germany in July. Of the 31 boys comprising the British team two gained gold medals, seven gained silver medals, and three gained bronze medals.

Fielden Electronics Limited. The Southern Area office of Fielden Electronics Limited has been moved to larger premises at 181-3, Earls Court Road, London, S.W.5, telephone number Freemantle 7866.

Transport lectures to B.A.O.R. officers. By invitation of the Commander-in-Chief of the British Army of the Rhine, a team of experts in cross-Channel transport gave a series of lectures to staff officers at B.A.O.R. headquarters on December 5 and 6. The team

consisted of Mr. G. W. Quick Smith, Adviser, Special Projects, British Transport Commission; Mr. J. L. Harrington, Chief Shipping & International Services Officer, B.T.C.; Mr. J. MacNaughton Sidey, Director, Anglo Overseas Transport Co. Ltd.; Mr. D. A. Whybrow, Director, Channel Air Bridge, Limited; Mr. D. Hennessey, Chairman, Hovercraft Development, Limited, and Mr. M. K. Bustard, Director & General Manager, Atlantic Steam Navigation Co. Ltd.

New B.R.S. depot. British Road Services opened a depot at South Shore Road, Grangemouth, on December 13.

B.R.S. charges to be increased. British Road Services is to increase its charges by 7½ per cent in the New Year.

W.R. assured-delivery service. The Western Region of British Railways is to inaugurate an overnight assured-delivery service for merchandise traffic in containers and full wagon loads, on January 1, 1962.

Leipzig Spring Fair. The Leipzig Spring Fair is to be held next year from March 4 to 13. The space available in the British pavilion will be 15,498 sq. ft.

N.U.R. district council disbanded. The London District Council of the National Union of Railwaymen has been disbanded. It is one of three district councils which have been merged into two for North-west and North-east London.

British Institute of Management conference. The British Institute of Management is to hold a one-day conference on "Planning for maximum profits" at the Connaught Rooms, London, W.C.2, on January 11, 1962.

N.E.R. through trains. The North Eastern Region of British Railways is to run special through trains to the South Coast holiday resorts in the spring and autumn next year, in connection with the Old Age Pensioners' Holiday Scheme.

Churchill machines U.K. representation. From January 1, 1962, representation in the United Kingdom for Churchill Machine Tool Co. Ltd. will be undertaken by Burton Griffiths & Co. Ltd., Mackadown Lane, Birmingham, 33.

Scottish Region services maintained. Despite the recent heavy snow and frost, the Scottish Region of British Railways managed to maintain its services. In many instances the only way to reach some towns and villages was by rail.

Increase in merchandise charges. British Railways is to increase its charges for certain parcels by passenger train and small consignments by goods train from January 1, 1962. Charges for parcels at owners risk by passenger train, including unaccompanied bicycles and similar traffic will be increased by not more than 10 per cent. Charges for small consignments by goods train will be increased by from 2½ per cent to 10 per cent.

Paper on transport of heavy plant. A paper entitled "Transport of heavy engineering plant for a nuclear power station," was delivered to the Industrial Transport Association, London Division, by Mr. K. J. McBride, Traffic Manager, Babcock & Wilcox Limited, on November 21.

Scottish Region Christmas trains. The Scottish Region of British Railways is to run 235 extra trains over the Christmas and New Year period. There will be a very limited service on the first two days of January, 1962, and skeleton suburban services will operate in the Glasgow and Edinburgh areas.

Railway Stock Market

With stock markets continuing their trend to lower levels, the usual falling off of business at the year end has been more marked, but foreign rails again maintained their quotations, though they were tested by very little business.

Antofagasta ordinary stock has been steady at 16¼, and the preference stock kept at 33½xd. Costa Rica ordinary stock was 35½, Guayaquil & Quito assented bonds 55, while Chilean Northern 5 per cent first debentures changed hands at 50 and Paraguay Central prior debentures at 23½. Mexican Central "A" bearer debentures were 56½, while elsewhere, San Paulo Railway 3s. units eased to 1s. 8¼d.

Canadian Pacifics have been inclined to strengthen; at $43⅞ there is a yield of nearly 5⅞ per cent, and the prevailing view is that there are reasonable hopes of the dividend being maintained. The 4 per cent preference stock at 54 and the 4 per cent debentures at 52 both yield over 7 per cent, which must be regarded as attractive, particularly in the case of the debentures. White Pass shares were $12⅛ at which the yield is 2⅛ per cent on the basis of last year's dividend of 20 cents per share.

Nyasaland Railways shares and 3½ per cent debentures were 11s. and 35s. respectively, and in other directions, business at 139½ was recorded in West of India Portuguese capital stock. Gedaref Railway & Development 5 per cent guaranteed stock was again quoted at 97½.

Shares of locomotive builders and engineers have been fairly steady at the time of writing, with Beyer Peacock 5s. shares 6s. 9d. Charles Roberts 5s. shares 4s. 3d. and Westinghouse Brake 23s. 6d. Birmingham Wagon declined to 20s., North British Locomotive were 5s. 9d. and G. D. Peters 16s. 10½d. Gloucester Wagon 10s. shares have reacted afresh to 11s. at the time of writing, awaiting any new developments in the take-over proposals. Elsewhere, Wagon Repairs 5s. shares were again firm at 26s. 3d.

Stone-Platt at 42s. 9d. held their recent rally, but T. W. Ward came back to 58s. 3d., though Vickers improved to 26s. 6d. Tube Investments declined to 58s. 9d., under the prospect of lower profits in the current financial year, though this was not unexpected, bearing in mind current trends.

In electricals, A.E.I. after rallying, eased to 29s. 3d. at which the yield is 10 per cent, while G.E.C. at 24s. 3d. yield nearly 8½ per cent and English Electric at 24s. over 8 per cent. These above-the-average yields reflect market fears that it will not be possible to maintain dividends at last year's rates. B.I.C.C. at 56s. yield under 4⅞ per cent. Leyland Motors were 85s. 6d. at which the yield is 4⅛ per cent. Pressed Steel 5s. shares have eased to 17s., but Dowty Equipment 10s. shares were steady around 29s. 7½d. Steel shares showed further sharp declines on balance, partly on the results, but mainly because of fears that the downward trend of profits will persist next year.

Forthcoming Meetings

Jan. 3 (*Wed.*). British Railways, Southern Region, Lecture & Debating Society. Chapter House, St. Thomas's Street, London Bridge, at 6 p.m. "Some electric traction developments," by Mr. W. J. A. Sykes.

Jan. 4 (*Thu.*). British Railways, Western Region, Lecture & Debating Society, Headquarters Staff Dining Club, Paddington, at 5.45 p.m. "Traffic costing today—a critical appraisal," by Mr. G. Dickinson.

Jan. 5 (*Fri.*). The Railway Club, Royal Scottish Corporation, Fetter Lane, E.C.4. Display of 16-mm. railway films.

Jan. 10 (*Wed.*). Permanent Way Institution, 222, Marylebone Road, N.W.1, at 6.30 p.m. "Features of maintenance and renewal on London Transport," by Mr. H. Chanter.

Jan. 10 (*Wed.*). Railway Students' Association, London School of Economics & Political Science, Houghton Street, W.C.2, at 6.15 p.m. "Forward into the European Railway Community," by Mr. J. L. Harrington.

Jan. 11 (*Thu.*). London Midland Region Lecture & Debating Society, Friends Meeting House, Euston at 5.45 p.m. "Films in the service of transport," by Mr. E. Anstey.

Jan. 11 (*Thu.*). British Railways, London Midland Region, Lecture & Debating Society, at Preston. "The postal service of the country and its relationship to British Railways," by the Head Postmaster, Preston.

Jan. 17 (*Wed.*). Railway Enthusiasts' Club, Brunswick Club, 30, Wandsworth Road, S.W.8, at 7.30 p.m. Film show on railway electrification.

Jan. 18 (*Thu.*). Model Railway Club, Keen House, Calshot Street, Kings Cross, at 7.45 p.m. "African and Eastern Railways," by Mr. H. L. Denyer.

Jan. 23 (*Tue.*). Institution of Locomotive Engineers, at 1, Birdcage Walk, S.W.1, at 5.30 p.m. "Progress of 50-cycle A.C. electrification on British Railways," by Mr. S. B. Warder.

Jan. 23 (*Tue.*). Institution of Railway Signal Engineers, at Chippenham, 6 p.m. "Automatic Marshalling Yards," by Mr. J. C. Kubale.

Jan. 25 (*Thu.*). Permanent Way Institution, Midland Hotel, Derby, at 6.30 p.m. Slides, photographs and discussion of exhibition at Elst, 1961.

Jan. 27 (*Sat.*). Permanent Way Institution. Annual winter general meeting at the Institution of Civil Engineers, Westminster, at 2.30 p.m.

Feb. 2 (*Fri.*). Institution of Locomotive Engineers, at 1, Birdcage Walk, Westminster, at 5.30 p.m. "Monorails," by Mr. H. H. C. Barton.

Feb. 2. (*Fri.*). The Railway Club, Royal Scottish Corporation, Fetter Lane, E.C.4, at 7 p.m. Annual general meeting.

Feb. 6 (*Tue.*). Railway Students' Association. Annual dinner and dance at 222, Marylebone Road.

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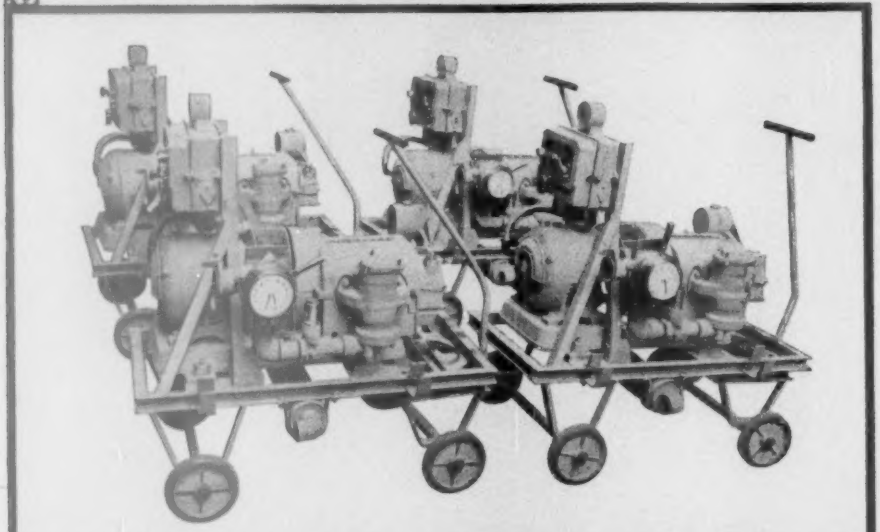

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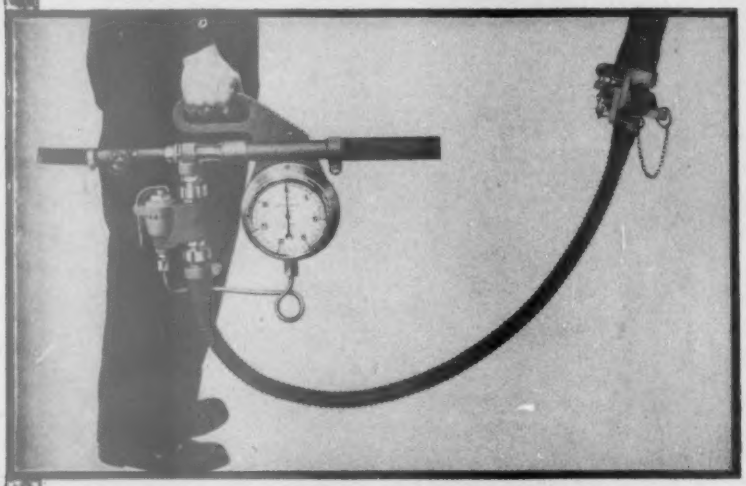

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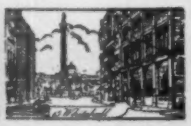

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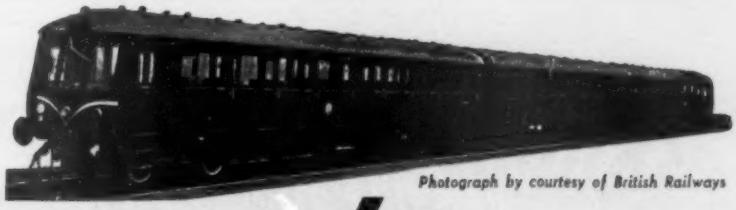

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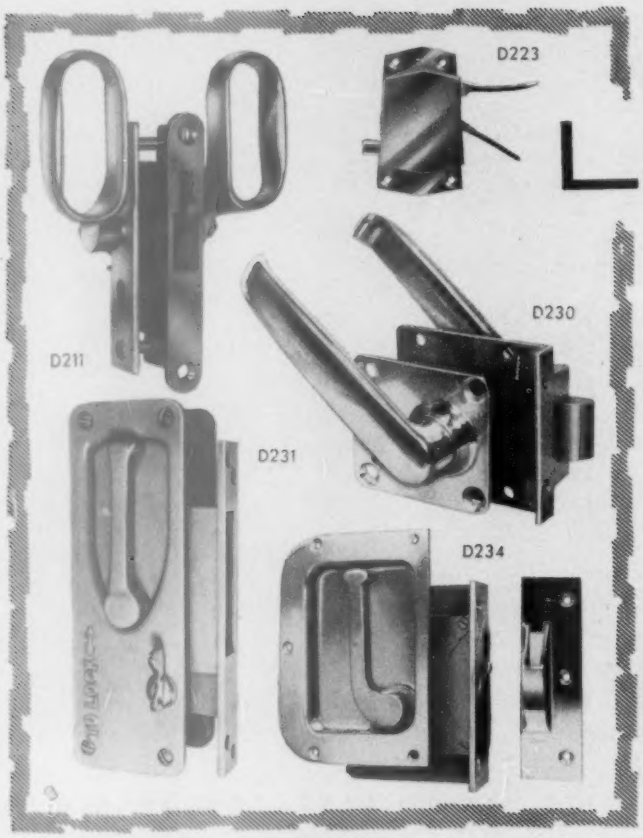

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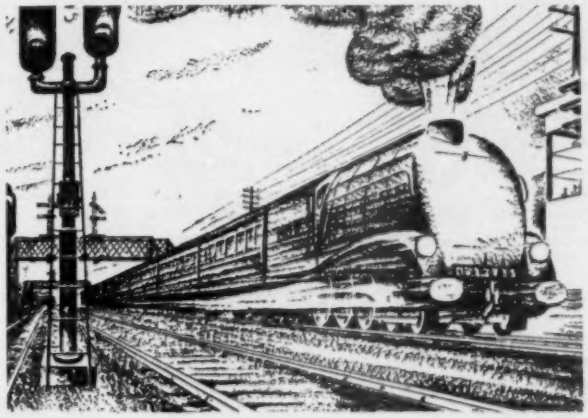

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